





SUBSCRIPTION FOR £25,000, IN SIX PER CENT. PREFERENCE SHARES OF £100 EACH.

Part of £25,000, which constitutes the entire Preference Capital of the **CORNWALL MINERALS RAILWAY COMPANY.**

Incorporated by Special Act of Parliament, 36 and 37 Vic.

Estimated net earnings available for the interest on the Preference Capital £67,875 per annum, being upwards of three times the amount required, viz., £22,500.

Price of Subscription—Par—£100 per £100 share, payable as follows:—

£10	on application.
20	on allotment.
20	on 30th April, 1874.
25	on 30th May, 1874.
25	on 30th June, 1874.
£100	(Less half year's interest due this day, £3 per share.)

Or, at the option of subscribers, the whole amount can be paid up on allotment under discount at six per cent. per annum on such pre-payment.

Subscribers will be entitled to the interest accruing from 1st January last, which will be allowed as above.

Reckoning such allowance, and the discount on pre-payment of the instalments, the net price is reduced to about £97 15s. per share.

The shares will be transferred into the name of each subscriber free of stamp duty.

The following is a list of the directors and officers of the company.

## DIRECTORS.

**A. C. SHERRIFF, Esq., M.P.—CHAIRMAN.**

The Right Honourable the Earl of DUNRAVEN.

**CHARLES GILPIN, Esq., M.P.,** Director of the South-Eastern Railway Company.

**SAMPSON LLOYD, Esq.,** Patent Shaft and Axletree Company, Wednesbury.

**J. S. LOUTH, Esq.,** Director of the Cornish Consolidated Iron Mines Corporation.

**C. H. ROBERTS, Esq.,** 2, Hare-court, Inner Temple, London.

**CHARLES E. TREFFRY, Esq.,** Fowey, Cornwall.

**GEORGE WILSON, Esq.,** Director of the Monkland Iron and Coal Company. ENGINEER—W. H. THOMAS, Esq.

**SOLICITORS.**

**Messrs. COPE, ROSE, and PEARSON,** 26, Great George street, Westminster.

**ATTORNEYS.**

**Messrs. PRICE, HOLYLAND, and WATERHOUSE,** 13, Gresham-street, E.C., London.

**MESSRS. G. S. HERBERT AND SON** are authorised to dispose of by public subscription 550 six per cent. preference shares of £100 each, being part of 3750 preference shares constituting the entire preference capital of the Cornwall Minerals Railway Company.

Subscribers will be entitled to the interest accruing from 1st January last, which will be allowed as above.

The price of subscription is par, or £100 per £100 share, or, reckoning accrued interest and discount for pre-payment of instalments, the net price is reduced to about £97 15s. per share, payable at the dates above mentioned.

The system of railways of this company is of a very important character to West Cornwall, affording most valuable business facilities to the extensive series of mining properties in the district, as by it they are placed in direct railway communication with the port of Newquay on the north, and the ports of Falmouth and Plymouth on the south, from which places extensive shipments of ore, both coastwise and the foreign trade, are made.

In addition to this, by the medium of the Cornwall Minerals Railway the whole of the mining district is brought into direct railway communication, via the Cornwall Railway, with Falmouth and Penzance on the south, as well as with Plymouth, and via the South Devon Railway and the Bristol and Exeter Railway, with Exeter and Bristol, thereby giving access to the whole of England.

The entire railway system of the Cornwall Minerals Company extends to about 25 miles.

The company also possesses special privileges in respect to the shipments from Fowey Harbour, which is accessible to vessels of 1000 tons burthen at all times of the tide, and which will be improved, and, by the addition of extensive wharves, sidings, and other works adapted to the shipment of at least 2500 tons of material per day estimated to pass over the railway. The company, in addition, leases Newquay Harbour and Par Harbour, thus concentrating in itself all the necessary arrangements for the movement of ores either by water or by railway.

The gross amount of earnings, including that from the harbours, is estimated at £160,250 per annum, and, after deducting working expenses and rents, the net earnings of the undertaking are estimated at £81,625 per annum.

The preference shares of the company form a first charge upon the whole of the net earnings (after deducting the interest on the debentures and rent charge, amounting to £13,750 per annum), which would leave the sum of £67,875 available to meet the dividend on the preference capital.

The annual sum required to pay the dividend on the total preference shares is only £22,500 per annum, to meet which it will be seen the estimated amount available is upwards of three times the amount required for the payment of such preference dividend.

The character of the security may, therefore, be considered as unexceptionable.

The Cornwall Minerals Railway is incorporated by a special Act of Parliament, 36 and 37 Vic., which consolidated the undertaking of the Cornwall Minerals Railway and Harbour Company (Limited).

The capital of the company is £750,000, divided into 3750 6 per cent preference shares of £100 each (of which the 550 shares now offered form part) and 3750 ordinary shares of £100 each, with £250,000 debentures.

The contract for the construction of the works provides for the completion of the entire undertaking by the 1st of July next, and due provision for payment of interest at the rate of 6 per cent. per annum on the preference shares during construction is therein provided.

The works have been actively proceeded with over the whole system, and, it is stated, are now in such an advanced state as to admit of the railways being opened for public traffic some months earlier than the period stipulated in the contract, the last report of the directors intimating that it is confidently expected that all the lines will be open for mineral traffic during next month.

The statement of the chairman of the company at a meeting of shareholders as to the prospects of the undertaking are exceedingly encouraging, as will be seen by the following extract from his speech.

"The directors firmly believed they had got possession of a district which had an immense amount of traffic for any railway which met its requirements. Not only did the district possess great mineral wealth—this railway having, in fact, been formed for the development of those resources—but it also traversed some of the finest scenery in that district, and he had no doubt that the passenger traffic of their line would hereafter form a very important feature in the earnings of the railway. (Cheers.) The directors were quite satisfied, from personal inspection of the country again and again, renewed, that they had the very best grounds for believing that this would be a success. (Hear, hear.)"

The following table will illustrate the current market price of railway preference shares:—

Name of the Company.	Rate of Preference Dividend per cent.	Stock Exchange price per £100 Stock.	Equal to for a Six per Cent. Stock.	Equal to a Premium per £100 Stock of
Bristol and Exeter	4	£ 94	£141	41
Cornwall (Guaranteed Stock)	4½	103	137½	37½
Great Northern	5	115	138	38
Great Western	5	115	138	38
South Devon	5	106	127	27
North Staffordshire	5	110	132	32
Great Eastern	6	128	128	28
Lancashire and Yorkshire	6	135	135	35
Manchester, Sheffield, & Lincolnshire	6	128	128	28
Midland	6	135	135	35
North-Eastern (Stockton & Darlington)	6	134	134	34

It will be seen from the above table that a very large margin exists for an increase in the value of the 6 per cent. preference shares now offered, beyond the price of subscription, so soon as the line is completed; and to trustees and others seeking a thoroughly reliable home investment, free from the risks inseparable from foreign securities of every class, the present affords a most desirable opportunity.

Provisional certificates will be issued in exchange for the bankers' receipts, and on completion of the payments the preference shares will be transferred into the name of each applicant, free of stamp duty or other charges, and the share certificate of the company will be obtained and forwarded in due course.

In the event of no allotment being made to any applicant, the deposit paid will be returned forthwith without deduction; should a smaller amount be allotted than applied for, the balance paid on application will be applied towards payment of the amount payable on allotment.

Applications, which must be accompanied by the payment of £10 on each share applied for, must be made on the annexed form, and can be forwarded either to Messrs. Williams, Deacon, and Co., bankers, 29, Bireh-lane, E.C. London; or to Messrs. G. S. Herbert and Son, 73, Old Broad-street, E.C. London, of whom forms of application can be obtained.

73, Old Broad-street, E.C. London, March 12, 1874.

Subscription for £25,000 in Six per Cent. Preference Shares of £100 each, part of £275,000 which constitutes the entire preference capital of the

## CORNWALL MINERALS RAILWAY COMPANY.

Price of subscription—par—£100 per £100 share.

Subscribers will be entitled to the interest from 1st January last, thereby (with allowances for pre-payment) reducing the net price to about £97 15s. per share.

## FORM OF APPLICATION.

(To be retained by the bankers.)

To Messrs. G. S. Herbert and Son, 73, Old Broad-street, E.C., London.

GENTLEMEN,—Having paid to your credit at Messrs. Williams, Deacon, and Co., bankers, 29, Bireh-lane, E.C., London, the sum of £ , being £10 per share, on my application for Six per Cent. Preference Shares of £100 each of the Cornwall Minerals Railway Company, I request you to transfer to me that or any less number of the said shares, and I hereby agree to accept such transfer, and to

pay the balance in respect of such shares, in terms of your prospectus dated the 12th day of March, 1874.

Name (in full).....  
Address.....  
Profession (if any).....  
Signature.....  
Date.....1874.  
(Addition to be signed by applicant desiring to pay up all the instalments on allotment.)  
I desire to pay up my subscriptions in full, on allotment, thereby entitling me to discount on pre-payment of the instalments at the rate of 6 per cent. per annum.  
Signature.....

## THE COAL MINES REGULATION ACT, 1872.

## EXAMINATIONS FOR MANAGERS' CERTIFICATES OF COMPETENCY.

**NOTICE IS HEREBY GIVEN,** that the undermentioned persons have been appointed to act as SECRETARIES to the several Boards of Examination, for the purpose of the grant of Managers' Certificates of Competency under the above Act.

In the examinations regard is had to such knowledge as is necessary for the practical working of mines in the different districts of the United Kingdom. Applicants desirous of being examined should, therefore, apply for all necessary information to the Secretary of that District in which they desire to serve as managers.

Home Office, 26th February, 1874.	Mining District and Name of the Government Inspector.	Name and Address of the Secretary to the Board of Examiners.
Scotland—Western Division.	(W. ALEXANDER, Esq.)	C. MACPHERSON, Esq., 116, St. Vincent-street, Glasgow.
South Staffordshire and Worcestershire.	(JAMES P. BAKER, Esq.)	W. BLAKEMORE, Esq., Heath Town, Wolverhampton.
Monmouth, Gloucester, Somerset, and Devon.	(LIONEL BOUTGH, Esq.)	J. T. THOMAS, Esq., (Care of J. B. Baker, Esq.), Albion-chambers, Bristol.
North and East Lancashire.	(JOSEPH DICKINSON, Esq.)	M. W. PEACE, Esq., 19, King-street, Wigan.
West Lancashire—the Wigan and St. Helen's Districts, and North Wales.	(THOMAS BELL, Esq.)	M. W. PEACE, Esq., 19, King-street, Wigan.
Derby, Nottingham, Warwick, and Leicester.	(THOMAS EVANS, Esq.)	WM. SAUNDERS, Esq., 42, Full-street, Derby.
Scotland—Eastern Division.	(RALPH MOORE, Esq.)	ROBERT CALDER, Esq., 298, Renfrew-street, Glasgow, N.B.
Northumberland, Cumberland, and Durham, north of the Wear.	(Geo. Wm. SOUTHERN, Esq.)	T. D. FORRESTER, Esq., 17, Rock-street, Shieldfield, Newcastle-on-Tyne.
South Wales.	(THOMAS WALES, Esq.)	C. H. JAMES, Esq., 8, Courtland-terrace, Merthyr Tydfil.
West Riding of Yorkshire.	(FRANK A. WARDELL, Esq.)	JOHN R. JEFFERY, Esq., Solicitor, Bradford, Yorkshire.
South Durham, Westmoreland, Cumberland, Whitby, and Cleveland.	(JAMES WILLIS, Esq.)	G. W. BARTLETT, Esq., Cleveland Parade, Darlington.
North Staffordshire, Shropshire, and Cheshire.	(THOMAS WYNN, Esq.)	JOSEPH KNIGHT, Esq., Newcastle-under-Lyne, Staffordshire.
Ireland.	(J. DICKINSON, Esq.)	M. W. PEACE, Esq., 19, King-street, Wigan.

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## Registration of New Companies.

The following joint-stock companies have been duly registered:—

**TINFOIL DECORATIVE PAINTING COMPANY (Limited).**—Capital 150,000l., in 100 shares. The precise object of this company is not stated. The subscribers (who take one share each) are—G. F. Beville, 69, Gloucester-place, Portman-square; G. F. Talbot, Edinbridge, Kent; A. C. D. Hanksley, Sunny Hill; C. H. Cooke, John-street, Bedford-row; A. Bouquie, Paris; Alfred Thompson, 10, Ovington-square; and C. E. Neucome, Sudbury.



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**INGS MILLS COMPANY (Limited).**—Capital 20,000*l.*, in 200*l.* shares. To take over the business of the Ings Mills Company (Limited), now in liquidation.

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**ELECTRIC POWER COMPANY (Limited).**—Capital 100,000*l.*, in 10*l.* shares. To acquire the Letters Patent for Great Britain and the colonies granted to Z. T. Gramme and E. L. C. d'Ivernois, for "Improvements in magneto-electric machines," and to assist and promote the economic application and development of electrical power. The subscribers (who take one share each) are—Wm. Abbott, of Tottenham; Richard Werderman, 4, Princes-street; Henry Holmes, 10, Tottenham-lane; William Dickerson Roloh, 39, St. George's-square; Lieut.-Colonel Stuart Wortley, Rosslyn House, Grove End-road; Charles Immanuel St. Alphonse, 75, Old Broad-street; and T. A. Edwards, 5, Cloak-lane.

**DARWEN SPINNING COMPANY (Limited).**—Capital 40,000*l.*, in 50*l.* shares. To acquire a cotton mill at Darwen.

**BOROUGH SPINNING COMPANY (Limited).**—Capital 60,000*l.*, in 50*l.* shares. To carry on a cotton spinning business at Oldham.

#### STEAM-BOILERS AT MINES AND IRONWORKS.

The recent terrible boiler explosion at Blackburn is a very sorrowful warning. Notwithstanding the great amount of information which boiler inspection and boiler assurance companies have disseminated amongst the owners and users of steam-power, and notwithstanding also the great additional instruction as compared with former times which the men in charge of that power, now get from those who are able to teach them scientifically, still, much has yet to be learnt and practiced before the country will become able to deal with this splendid motive-power with that freedom from peril which should be possible. Happily, much has been accomplished and not the least amongst the keepers of the steam-boilers at mines and ironworks.

The number of steam casualties in 1873 was 88, whereby 66 people were killed and 94 were injured. Of these the largest number of accidents were at collieries and ironworks, as was to have been expected from the large number of boilers employed at those places. The precise number of casualties at mines and collieries was 24, killing 14 and injuring 7. At ironworks the accidents were a total of 17, the deaths 17 also, and the injured 30. The causes of explosion have been much the same as in past years, rather more perhaps from faults of construction or repair, and also from faults which could be prevented by due care on the part of attendants; but the average number has been from either internal or external corrosion, which could have been detected by proper inspection. The class of boilers which has exploded most often has been the Cornish two-tubed, which is perhaps the boiler most in use. Several of the explosions showed that too much confidence had been placed in the construction and make of the boiler, without that inspection from which alone it can be ascertained that the condition continues as good as at first. The experience of the past year confirms the opinion that no form of boiler is free from the danger of explosion if it is not well looked after; and that the best means of preventing explosion is to insist upon inspection and careful attendants.

To all this the nearest way is to place boilers under official and independent inspection. It is owing to the extent to which this has been done by colliery and ironworks proprietors that, reading the aphorism reversely, "the former times are not as these," that we have now so few explosions compared with those of some years ago. That there should be no abatement in the manifestation of this prudence among the interests specified is gratifying. In the last half of 1873 a large proportion of 85 boilers put for the first time under the care of the Midland Steam-Boiler and Inspection Company, for instance, were colliery and ironworks boilers. Of the 3555 boilers under that company 1266 are used at collieries or mines, and 1581 are at ironworks. There are no boilers now in use which give us more concern than the very long furnace boilers, in favour by some of the ironmasters for utilising the gas from the blast-furnaces; and it augurs well for the future that men skilled in the science of boiler working and boiler making should be giving that class of boilers their attention, with the view of lessening the risk at present consequent upon their use. The suggestions made some time since to divide these boilers into lengths have led to various modifications of separate boilers connected with narrow necks or rigid pipes. These, however, have given only partial satisfaction. Other boilers of different construction are preferred by many, but as some ironmasters consider the gases are more effective in one long flue, without bends, Mr. E. B. MARTIN, the chief engineer to the company we have named, is doing the right thing in bringing as much as possible before the public his recommendation, which embraces the entire separation of the long plain cylinder boilers into distinct compartments, in the same seating, with pipe connections suitably arranged for preventing rigidity.

#### ECONOMY IN RAISING WATER—THE MCFARLAND ROTARY PUMP.

That the rotary pump is in principle the nearest approach to perfection that need be desired has been many years acknowledged, but owing to the difficulty encountered in the practical application of the principle the McFarland is certainly the first rotary pump that has come into general favour; it will, therefore, be interesting to enquire what are the peculiar features of the McFarland pump, which have secured its claims to popularity. The great merit of the rotary principle is due to the entire absence of a back-stroke, without the simultaneous loss of the enormous advantage of a well-packed piston. That the absence of the back-stroke is of paramount importance is evidenced by the excellent duty obtained even by the centrifugal pump, in which the equivalent of a piston cannot be permitted to approach the cylinder; and many of the most ardent admirers of the centrifugal principle have willingly asserted that it only required the surmounting of one or two comparatively small practical obstacles to render the rotary pump superior to all others. Minor improvements have from time to time been made in attempting to produce a good rotary pump, but it remained for Mr. McFarland to design the much wished for machine, in which the theoretical perfection of the principle is fully secured in practice.

It may be mentioned for the information of those not intimately acquainted with the construction of the various forms of pumps that the rotary pump differs from the ordinary lifting pump in having a piston which fits longitudinally instead of transversely; and as this was supposed, until Mr. McFarland proved the contrary, necessarily to involve the use of eccentrics, springs, slots, and various other contrivances very liable to derangement even under the best conditions, the annoying character of the difficulties with which inventors had to contend will really be appreciated—improved eccentrics, new forms of springs, curiously devised slots, and anti-friction rollers, rotating cylinders, and such like having from time to time been brought forward until many had almost come to believe that the rotary pump was one of those machines which, although holding out the promise of great benefit to industry, was altogether beyond our reach. But by striking out an entirely new course for himself Mr. McFarland has secured an enormous practical success, and the McFarland pump, in which neither eccentric, spring, slot, nor roller is used, is likely to become more extensively used than any pump which has for many years been introduced. The mode by which the use of all these things is dispensed with is highly ingenious; and in proof of the excellent result produced, it will suffice to state that the suction is so perfect that water is raised with the pump running at only three revolutions per minute, and that owing to the principle upon which the pump is constructed the friction is even less than in the best constructed reciprocating pump; the reason of this will be readily understood.

Precisely in the centre of the working cylinder of the pump a hub is placed, and upon this the gun-metal arms or feathers which form the pistons are carried, the mode in which the hub and feathers are connected being comparable to that which exists between the hour-hand of an ordinary watch or clock, and the hollow hub which carries it—a stronger connection and one in every way less liable to derangement could scarcely be devised. In the McFarland pump the feathers fit freely on the hub, the sole object of which is to retain

them centrally within the cylinder. The driving shaft passes through the lower part of the hub, and carries a disc of considerably smaller diameter than that of the cylinder, such disc having two elongated oval pieces removed in the same diameter, but on opposite sides, so that in revolving it can carry round the feathers. By this arrangement the necessity of applying pressure to keep the feathers properly packed to the cylinder is removed, and as there is nothing to injure the feathers when once placed in the cylinder, they will run for a considerable time without any attention whatever. There are several important improvements in details which add much to the efficiency of the pump; not the least important being the duplication of the parts by dividing the cylinder transversely, and running two feathers in each compartment, so that there are always two feathers working simultaneously, and a feather in one compartment 90° behind the working feather in the other compartment. By the position of the discs with regard to the feathers the latter are well covered and protected during the portion of the revolution in which they are not doing useful work, and thus the wear and tear is reduced to the minimum. Another improvement in detail worthy of notice is the construction of the outlet part of the cylinder; it is so formed that in the event of any extraneous matter passing through the pump (and it has been proved that foreign matter does not injure the pump, inasmuch as coals up to 2-in. cubes have passed through one of the pumps with a 4-in. suction pipe whilst it was running at 100 revolutions per minute) it has no tendency to return, but is at once received in the outlet pipe, and carried forward by the stream. Other improvements in details might be mentioned, but these will suffice to show that the utmost attention has been paid to every portion of the pump.

On March 6 an opportunity was afforded the general public to see it in operation, a double-action 4-in. rotary pump being then exhibited at the West India Docks, giving great satisfaction to engineers and others present. A few weeks since similar experiments were made at Dundee with equal success. The same principle, with slight modification, is applicable as a steam-engine, and from the admirable manner in which the engine worked the pumps on Tuesday it will be surprising if the pump and engine be not in most cases employed in combination, the favourable effect of which upon the profits of the company cannot be doubted. As the readiest means of demonstrating the power of the pump, it was tested as it would be applied for the extinguishing of fires—a hose, with first a 1½-in. nozzle, and then a 1½-in., being attached to the pumps, with 4-in. suction-pipes. With 20 revolutions per minute a full volume of water was thrown through the larger nozzle a distance of 120 ft., with a trajectory of 50 ft., and a full bore delivery was obtained, when the gearing was disconnected, and some of the gentlemen present worked the pump by hand. In the next experiment, with 106 revolutions per minute, the quantity of water thrown was 80 tons in the hour, the 1½-in. nozzle carrying 140 ft., and the 1½-in. 130 ft., the trajectory in both cases being 70 ft. As a complete pump upon the McFarland principle will be supplied by the company for 40*l.*, there are innumerable purposes for which such a machine would prove invaluable, and it cannot be doubted that, amongst other things, for facilitating economy in surface operations at mines the combined pump and engine would not only be a boon to miners, but would often aid them to maintain a good position in the Dividend List. The progress of the invention will be watched with much interest.

#### ECONOMIC MANUFACTURE OF COKE.

During the past three years considerable progress has been made in devising improvements in the manufacture of coke, and in the methods of utilising the gases given off during the process of coking; amongst the most recent inventions introduced to the coke manufacturers of this country is that of Mr. E. Coppée, recently adopted at the works of the Ebbw Vale Iron and Coal Co., Ebbw Vale, Monmouth, where they will be in full operation in two or three weeks. The object of Mr. Coppée's invention is thoroughly to utilise the heat given off by the coal whilst being coked by employing the heated gases upon an improved principle. He claims that by the use of this system he retains in the oven the largest possible proportion of the carbon contained in the coal, and utilises the heat of the gases to the utmost by applying such heat both to the sides of the ovens and to the production of steam. The ovens, which are free from complications of any kind, are rectangular, their usual size being about 30 ft. long, from 1½ ft. to 2 ft. wide, and about 4 ft. high.

The great economy of the Coppée system is no doubt mainly due to the rapid combustion, in the surrounding flue of the ovens, of the volatile gases evolved from the coal, creating a very high temperature, which is uniformly maintained. Something is also due to the methods of charging and discharging the ovens, by which the loss of heat is reduced to the minimum. The ovens are charged with coal once every 24 hours, and the coals are crushed before being placed in the oven to a coarse dust. The ovens are filled with coal from the top, by means of three holes, over which three wagons containing the exact quantity of coal to be used are placed before the coke is removed from the oven. At each end of the oven are two doors, the lower being 3 ft. and the upper door 1 ft. in height. Between each two ovens are a number of vertical channels, which lead from the top of the oven, and convey the gases to the horizontal flues, one of which runs under each oven. The ovens are arranged in groups of two, and the gases from each two ovens pass down the vertical channels referred to, passing into the horizontal flues, from which they take their course into a large channel running at right angles to the ovens. The hot gases pass from this channel either direct into the chimney or under one or several boilers. The great heat which the gases leaving the ovens attain has made it necessary to have a series of cooling flues placed beneath the flues for carrying the gases. These flues are open at each end of the block of ovens, the air passing in at one end and out at the other.

For the removal of the coke from the ovens a ram propelled by a small portable engine is employed, the engine and ram being placed, when an oven is ready for discharging, opposite to the end of the oven, and three wagons of coal are placed over the three openings at the top. The coke is then pushed out by the ram, this operation occupying about two minutes. A jet of water is at once applied to the coke whilst it is being spread out on the floor. At the same time the lower doors are closed and the coal dropped into the oven, the apertures through which the coal passes being immediately covered up by sliding doors. The coal is levelled in the ovens by means of rakes passed through the opening of the upper doors; the upper doors are then closed. The time occupied from the moment the doors are opened to their being sealed up again is eight minutes.

At the commencement of the burning the admission of air to the oven is regulated by three small channels, by means of which air can be conveyed either into the top of the oven or into the vertical flues. One of these air passages is in the centre of the oven, and the others are at each end of the oven, at the side of the doorway, a very simple arrangement of sliding doors allowing the air to be applied or shut off with great facility and promptness. It has been shown by experiment that these ovens yield only 2 per cent. short of the actual quantity of fixed carbon contained in the coal used. For reasons previously given no rule can be laid down in this respect, at least as regards English coal. A percentage, varying from 70 to 83 per cent. in Belgium, and from 67 to 75 per cent. in England, probably represents the actual results these ovens will give. As the gases evolved from the coal are all entirely consumed, any nuisance to the surrounding country from coke ovens is entirely avoided.

With regard to the comparative cost of the ordinary and of the Coppée oven, the first cost of the latter is nearly twice as great; but this is much more than compensated by the fact that the Coppée oven produces 2½ the quantity of coke in a given time. The Coppée has, moreover, the important advantages of occupying but one-fifth the space, and that the Coppée oven can be emptied and re-filled in eight minutes, whilst the ordinary oven requires over six minutes. The coke produced by the new system is firm and dense, the proportion of breeze and refuse is materially reduced, and the general cost of the labour charge scarcely exceeds two-thirds. Owing to the quality of the materials, the very regular action and the non-application of water inside the ovens, the cost of repairs is very small,

and it is stated that a block of ovens in Belgium, which has been twelve years at work, has cost less than 7*s.* per oven per annum for repairs. The ovens certainly appear to be excellent, and the fact of the coal being used in the form of powder will be among the most important advantages of the system.

#### THE AMERICAN IRON AND STEEL TRADE.

Although incorporated only four years since, the Joliet Iron and Steel Company of Chicago has secured quite a high reputation for the manufacture of Bessemer steel rails and all kinds of pig and merchant iron, a ready sale being found for the entire make of the works, the capacity of which is at the present time 2750 tons of iron rails and 2500 tons of steel rails per month, and it is considered that when the extensions now in progress are completed, which will be the case within three months from the present date, the power of out-turn of steel rails will be increased to an amount of at least 3000 tons per month. The company, which has a special charter conferring limited liability, has a nominal share capital of \$2,500,000, or 460,000*l.*, and a 10 per cent. mortgage bond capital of \$1,000,000, or 184,000*l.*, but hitherto there has only been issued and paid up \$1,900,000 in shares and \$600,000 in mortgage bonds. The constantly increasing business of the company demanding the employment of additional capital, Messrs. Chadwicks, Adamson, Collier, and Co. have been authorised to invite subscriptions for the unused stock—5400 shares of \$100 at 18*l.* 8*s.* per share, and 400 bonds of \$1000 at 18*l.*, and accrued interest—which is to be issued for amounts at subscriber's option, the shares to be paid for on allotment, and the bonds one-half on allotment and the balance in a month.

The works, which are built almost entirely of stone, principally with iron roofs, have been described as the best and most complete in America, and bear very favourable comparison with the best known and most perfect works of the kind in Great Britain, extend over about 100 acres of freehold land, and comprise in the whole four blast-furnaces, two Bessemer converters, eight Siemens' heating furnaces, and every requisite for a large and extended trade, with steam-engines, two rail mills, foundry, machinery and boiler shops, and other requisite appliances of the most approved modern principle and construction. There are also private water-works, coke ovens, and fire-brick works, while a system of railways connecting every part of the works with the Chicago and Alton, and Chicago Rock Island and Pacific Railways, gives means of direct communication with every part of the United States. The company has also half-a-mile of water frontage on the Illinois and Michigan Canal, giving the means of cheap water communication with St. Louis and other points on the Mississippi.

Many commercial advantages have been secured in order to permit of the business being carried on economically. Independent supplies of coal are held by the company, consisting of 3000 acres leasehold coal lands, held on low royalties, and producing from two collieries 10,000 tons of coal per month. This supply is constantly increasing. The company also owns in Missouri large workings of red hematite ore, yielding 60 to 65 per cent. metallic iron, and well adapted for the production of Bessemer steel. In comparison with English Bessemer steel rails now used by American railways, the saving of freight, insurance and import duty, is estimated at 7*s.* sterling per ton in favour of rails made by the Joliet Company; and the company being part owners of the Bessemer royalties for the United States charge themselves with the proper royalty on their production, but receive a proportion back in virtue of their proprietorship. The effect of this is to set the company partly royalty free on their output. The directors are all large proprietors of the works, and have established the company on principles strictly in accordance with those which regulate the similar action of our own immediate friends in the establishment of such works in England; so that the stock should offer considerable attraction to British capitalists.

The profits were 20 per cent. in 1871; in 1872, when the only portion of the works running were the rail mills, representing capital to the amount of \$350,000, there was earned 15 per cent. on \$1,000,000, and in 1873 the profits were 17 per cent. The stock is very generally regarded as an eligible investment.

**WINDING-UP BY THE COURT.**—A striking instance of the protracted litigation arising out of the winding-up of companies by the Court, or under the supervision of the Court of Chancery, was afforded in the case of the Cambrian Railways Company v. Hafod Hotel Company, heard before the Master of the Rolls on March 3, upon a motion made on behalf of the Cambrian Railways Company, "to remove the liquidator of the Hafod Company (Mr. Robertson), to give the railway company authority to use the name of the said liquidator in a contemplated process at law against the Mid Wales Hotel Company, on the alleged ground that the railway company could not obtain payment of 470*l.* said to be due to them by the Hafod Company." The Hafod Company was established in 1863, and were then the proprietors of the Devil's Bridge Hotel, and also of freehold land at Aberystwyth, on which it was intended to build the Queen's Hotel. The Queen's Hotel was opened before it was quite finished; owing, however, to several collieries, arising from the monetary pressure of 1865, and the subsequent stoppage of Mr. Thomas Savin, who was erecting an opposition hotel (now the University College of Wales), the Hafod Company found that it was necessary to discontinue operations at the close of the first season; and hence, to secure an equal distribution of its assets, a petition for voluntary liquidation, under supervision of the Court, was presented on Nov. 16, 1866; the order was made on Dec. 15; and Mr. Robertson appointed liquidator on Feb. 11, 1867. Two days afterwards the liquidator sold the property and business to Mr. J. B. Balcombe, who had been managing director of the Hafod Company, for the Mid Wales Hotel Company, since formed, for 47,400*l.*, of which 13,700*l.* was payable in 10*l.* shares, with 7*l.* 10*s.* paid-up, and 14,000*l.* by instalments out of profits, the remainder being represented by the new company taking over 40,000*l.* of mortgage and debenture debts. The sale, or what was virtually the re-constitution of the company, was opposed by a minority, and in November, 1867, an application was made to the late Master of the Rolls, Lord Romilly, to set aside the agreement between the two companies. This application, however, failed, the Master of the Rolls stating "that although the agreement might be irregular, yet the liquidator had acted bona fide, and in the best interest of the creditors. To set it aside now would create inextricable confusion, and as the applicants had chosen to stand by for ten months he should make no order on the summons." Thus secured in their position the Mid Wales Company bought up the claims of the Hafod Company's creditors. Mr. Balcombe complains that the proceedings in this liquidation are ten times more than bankruptcy, since in the practice of the Bankruptcy Court a period for proof of claims is fixed, and creditors are called on to prove, failing which they lose the benefit of any distribution of assets previously made; and he adds that in this case the usual statutory notice was signed by the chief clerk in 1868, and was gazetted and published in several local and other papers. Not a single creditor proved, and yet he continues, nearly four years after, and when the liquidation is supposed to be over, it is found that the liquidator has admitted by affidavit that he has not paid Mr. Balcombe contents that it had been incontestably proved by affidavit on or prior to December, 1869, the full engagements of the purchasing (Mid Wales) company had been more than satisfied, and that there was no estate left. It was urged on behalf of the liquidator that the Cambrian Railways Company was not entitled to a judgment by reason of its own laches, and that it should be explained why they remained passive as to their claim for five years and a-half after the date of the winding-up order, and why they did not come in four years ago, when the chief clerk issued the usual statutory notice to creditors. The claim was brought in in May, and admitted in June, 1871, which, it was contended, was after the purchasing company had actually paid 16,827*l.* to Hafod creditors, or 2827*l.* beyond its liability to pay. The Master of the Rolls remarked that it had not been an equal distribution, because he had a guarantee of the directors before him to pay 8000*l.* in full should the company fail. He made the order: "Refer back to Chambers to see whether sums exceeding 11,000*l.* have, with consent of the liquidator, been paid to creditors of the company other than to mortgage and debenture holders, before April 1, 1871; summonses to stand over until after enquiry, and reserve costs."

**ROTARY-ENGINES.**—Mr. J. GRAFTON JONES, of Gloucester-terrace, Amherst-road, has patented some improvements in rotary engines. The engine in its simplest form consists of a cylinder with inlet and outlet passages; in its side are axes passing through the cylinder eccentrically, and cast with the axis is a block also of cylindrical form, and of a size to touch with its periphery on one side of the interior of the cylinder. In the block two radial sliding tongues are fitted; they are pressed outwards by a coil spring lodged in holes drilled in the block directly through the centre and axis of the block.

**ZINC ALLOYS.**—Mr. JAMES WRIGHT, C.E., of Gresham House, Old Broad-street, has patented (for M. Guillen, of Marseilles) some improvements in the method of treating zinc alloys for the purpose of recovering zinc therefrom. The invention relates to an improved method of recovering zinc which has been used for desilvering or separating other metals, chiefly lead. To carry this out he arranges in a furnace one or more dry crucibles or melting pots, into which the alloy containing zinc is placed. A tube passes from each of the crucibles, and connects it with a closed receiver, the mouth of the crucible and the pipe connections with the crucible and receiver, as well as the crucible mouth, being luted or hermetically closed, the furnace is brought into action, and upon a white heat being obtained the zinc volatilises, and passes through the pipe into the receiver, where it is deposited in a metallic state.

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## Lectures at the Royal School of Mines.

## ON METALS.

Dr. PERCY commenced the sixth and last lecture of this course with a few miscellaneous remarks on BRASS. First of all, with regard to bronze powders, which are powders of different metals and metallic alloys, and amongst the alloys are certain kinds of brass, varying much in their percentage of copper. The alloy is rolled into thin sheets, and then ground up by means of sandstone and water, so as to bring the metal into the state of mud, mixed more or less with the material of the grindstone. Nothing is more easy than to separate the sandy matter of the stone from the metallic mud; the specific gravity of the two substances differing greatly. By mixing the mud with water, and stirring it up, and then pouring off the water, much of the sand and but little of the metal will be removed, and by repeating the process several times an almost perfect separation may be effected. In this means we get the metal in the fine state of very fine powder, and it is possible to vary the tint of this powder by heating it under certain conditions so as to cover each particle with a thin film of oxide. The ancient city of Nuremberg for long enjoyed a reputation for these bronze powders.

A few words, next, with regard to "lacquering." It is very well known that brass, which has a bright surface, exposed to the atmosphere speedily becomes covered with a dark coat, hence the necessity for frequently polishing door-knobs, door-plates, &c. There are two ways of dealing with brass—one is to keep it polished; the other is to protect it by a varnish—lacquer. Lacquer is made by dissolving shellac in proof spirit, and sometimes a small amount of "dragon's blood"—the product of a kind of palm—is also added. The brass, after being cleaned, dipped, and warmed, is painted over with the lacquer. Prepared shellac is made for the purpose of getting a nearly colourless and transparent lacquer. With regard to the rolling of brass, here are some specimens of brass, which, although rolled with all proper precautions, are cracked and broken at the edges: it turned out on examination that the copper which had been used in the manufacture contained a sensible quantity of antimony, and antimony is commonly reputed to be one of the most injurious ingredients in brass intended for rolling. It is usual to add to brass required for turning a small quantity of lead, speaking roundly about 2 or 3 ozs. of lead to 10 lbs. of copper. Brass for engraving purposes, which is required to be harder and to break crisp under the "graver," has usually a small quantity of tin added. In some kinds of brass certain changes occur, notably that employed in chains for supporting gaseliers; the brass becomes brittle, and breaks without any apparent cause. I have been for some time collecting specimens which have thus fractured with a view to examining them on some future occasion, and shall be pleased to receive any which may fall in your way. There is one means of restoring to brass which has thus become brittle its tenacity, and that is by annealing it, or heating it to redness. There is one defect which sometimes appears in brass after lacquering; greenish blue spots appear here and there on the surface, throwing up the lacquer, and spoiling it. As far as I have been able to judge, the cause is this; it is not an uncommon thing to find on the surface of brass, or immediately below the surface, numerous minute bubbles, and I believe the "efflorescence" I have described to be due to the corrosive action of some acid retained in these bubbles which has not been washed out by the water after dipping. And here I may remark what a great deal there is to be learnt from the study of defective metals, and varieties of metals, and it has long been my impression that it would be of immense importance if we could secure for some national collection all those defective metallic specimens, especially those which have of late been too numerous. I mean the railway specimens. I believe such a museum or collection would be of great practical value. If in pouring out the brass a small fragment of any foreign impurity should get into the molten metal, on rolling out the metal this becomes elongated, and thus we have a weak part in the sheet. In this way it is that split shillings, and occasionally split sovereigns, are produced.

We will now turn to another metal—Lead. Lead has been known from the remotest antiquity; it has a bluish-white tint, is one of the softest of metals; still, soft though it be, it can be hardened somewhat, or at least can be rendered less soft, as by the operation of hammering, if the hammer be not so rapid as to raise the temperature so high as to make it anneal itself. If you take lead, and draw it out into wire, you will find that the so-called hard drawn wire—that is wire as it comes from the draw-plate—has a much greater strength than if it be heated in boiling water, nearly double the strength. The specific gravity of lead is 11.38; its melting point is variously stated, but the best observations I can find place it at 324°C. Lead, when heated to a certain point, becomes very brittle; if a piece be heated for some time to a temperature bordering on, but sensibly below, its melting point, and it be then struck a smart blow, it will break to pieces, and present much the appearance of "grain tin," which is prepared in a similar way. It presents a columnar fracture, not unlike pieces of common starch, and, other things being equal, the purer the lead the larger will be the columns in the fracture. Common soft lead emits a dull sound when struck; the dullness of the sound is an indication of the purity of the metal; the duller the sound the purer the metal, other things, as shape, size, &c., being the same. What takes place with regard to the welding of iron at a high temperature takes place in a certain degree in the case of lead at a lower temperature. For example, take a lead bullet, and cut it through with a clean sharp knife, press the cut surfaces together with a screw motion, and they will adhere; that is a true case of welding. If a piece of lead be exposed to dry oxygen gas at the ordinary temperature, no change will take place, but if exposed to moist oxygen or air it becomes rapidly tarnished; the most rapid action occurs with pure lead and pure water. If the lead be impure, as when alloyed with a small quantity of antimony, the action is retarded, and may be almost prevented. If we melt lead with free access of air it oxidises, and if the operation be conducted for some time, continually stirring it about without allowing the temperature to rise high enough to melt the oxide, we get yellow oxide of lead, or massicot. When the yellow oxide is heated to a certain degree, it melts and forms a crystalline product—litharge; and if we heat the oxide for a much longer period it takes up an additional quantity of oxygen, and becomes converted into "red lead." By heating oxide of lead with charcoal or coaly matter, the oxygen is removed, and the lead separates in the metallic state. Sulphur and lead combine with great power when heated together, and form sulphide; this substance occurs native in large quantities, as a bright, shining grey metallic body—galena, the chief ore of lead. If we mix oxide of lead and sulphide of lead in such proportions that the sulphur of the one and the oxygen of the other are in the right proportion to form sulphurous acid, on submitting the mixture to a good red heat we can obtain the lead entirely in the metallic state. So if we take a compound called sulphate of lead, and mix it with sulphide of lead in proper proportions, we obtain a like result. Lead ore always contains silver, and in the course of numerous experiments we have made on lead ores from all parts of the world, we have never met with a single specimen which did not contain both silver and gold, and I believe that every piece of lead in the world has these two metals associated with it. When galena is heated strongly, and the air allowed to play freely upon it, the sulphur in great measure burns off, but in the place of that sulphur oxygen is substituted, and we get oxide of lead. The furnace employed for lead smelting which I shall describe is called the Scottish furnace; the bars are prismatic pieces of iron, about 20 or 30 in. long. The furnace is built of brickwork, and the interior is composed of various pieces of cast-iron. At the bottom is a cast-iron box, several inches deep, known as the "hearth bottom." In front of the furnace is placed a cast-iron plate in a sloping position, called the "workstone." At the back is a piece with a groove in it, called the "pipestone," on which rests the nozzle of a double bellows. In front of the workstone is a kettle to receive the molten lead which flows out, below which a fire is kept burning, and from which the metal is ladled out into casting moulds. The furnace is built under a chimney, for a good deal of lead smoke is produced, which is very injurious. In this process heat is used for the fuel in conjunction with coal. The fire being made up, the hearth bottom

is filled with lead from a previous working of the furnace; upon this pieces of raw ore are pitched in from time to time, and every now and then a pig of metal is thrown in front of the bellows' nozzle to distribute the air as uniformly as possible through the mass in the furnace. By-and-by some of the molten lead will run out; fresh pieces of ore are thrown in, and so by the action of heat and atmospheric air we can succeed in obtaining the lead in the metallic state. Lead ore is never pure material, and you cannot get the whole of the lead out by one operation; a slaggy matter rich in lead is left—this is picked out in lumps, and laid aside for a further operation; the greater part of the antimony of the ore remains in this slag. The slag is put into a small blast-furnace of a somewhat different kind; the lead in it is in the state of oxide, and we have only to bring it into contact with red-hot coaly matter, coke, &c., to reduce the lead. In front of the furnace is a cast-iron pot divided into two parts—one small, one large, by a partition which does not reach quite down to the bottom of the pot. The larger compartment is loosely filled with a mass of ashes and cinders. As the products of the operation in this furnace we get a glass-like stuff called slag (which contains but little lead) and metallic lead, the former being much less fusible than the latter. A small channel runs from the furnace into the larger compartment, and as the products run out the slag solidifies among the ashes and cinders, while the much more fusible lead sinks through and collects in the smaller compartment. Slag lead is much harder than lead obtained in the first operation; it also gives a much clearer ring when struck.

I have said that lead ore always contains silver, but the silver in many cases is not present in sufficient quantity to be extracted with profit. There is an old method of getting out the silver—cupellation, founded on the following principles. If we take lead and heat it strongly with free access of air it oxidises; silver under the same circumstances does not oxidise. Thus, if we heat strongly a mixture of the two metals, the lead will burn off as litharge (meaning silver stone), and if we make provision for removing this oxide the silver will be left. A shallow oval-shaped vessel is used called a "test," and it is filled with bone-earth mixed with pearlash and water, stamped well to make the whole solid. A shallow cavity is scooped out in the mass, the sides of the cavity inclined towards the centre, and the "test" is placed in a reverberatory furnace, and the blast and heated air play upon it. It is best to have two flues, as to make the flame play over it as uniform as possible. At one side of the furnace is the lead kettle full of molten lead (which contains the silver), and from which supplies of the metal are ladled into the furnace as required. The blast is supplied by a pair of double bellows at the back of the furnace. When all this is ready, and the blast on, what takes place? The lead oxidises with great rapidity, the temperature being kept high enough to melt the mass. The litharge floating at the top flows out down a small channel in front, fresh lead being introduced to supply its place, and so the process goes on hour after hour. At length we cease to add lead, but still keep up the blast for awhile, till we know by certain signs that we have got off as much of the lead as possible. A mass of molten silver remains, and as it cools a curious phenomenon occurs, which gives to the surface of the solidified metallic mass a rugged miniature volcanic appearance. Melted silver has the property of absorbing and retaining while melted a quantity of oxygen gas, and as the metal solidifies this gas is given off with a kind of explosion, rupturing the crust which had formed on the mass; the silver can absorb 22 times its volume of oxygen. Another method of separating silver from lead, known as the method of desilverisation by crystallisation, was discovered by Mr. Pattinson. By the old method it did not pay to extract the silver if it was less than 8 ozs. to the ton, by Mr. Pattinson's process if there be as much as 3 ozs. to the ton it will just about pay the expense of extraction; all above that is gain. His discovery was that it is possible by very simple means to concentrate the silver contained in a large quantity of lead into a small quantity of lead. It is on the same principle as that by which ice formed in impure water is nearly pure. Here the silver is the impurity, the lead corresponding to the water, and its crystallising to the freezing of the water. A quantity of lead, five or more tons, is taken and smelted in a large cast iron pot. After it is melted it is allowed to cool slowly, being stirred up the whole time, part of the lead crystallises out, and after a certain time a long iron ladle is introduced in the liquid, and the crystals fished out. These crystals are nearly pure lead, nearly the whole of the silver remaining in the still molten mass. By repeating this process several times we obtain a lead very rich in silver; say we started with 8 ozs. to the ton, we may have brought it at last to the amount of some hundreds of ounces to the ton.

## MIDLAND INSTITUTE OF MINING ENGINEERS.

The usual monthly meeting of members was held at the Queen's Hotel, Leeds, on March 4. Mr. W. P. MADDISON, the president, in the chair. A long and interesting discussion took place on a paper recently read by Mr. Samuel Frith, of Leeds, "On a Universal Rail Gauge for Collieries." The non-uniformity of gauges in collieries is a constant source of perplexity to colliery managers, and the adoption of one or two uniform gauges for thick and thin coal mines would, it was felt, be a great boon, more especially in view of the probable general adoption of coal-cutting machinery, which is considerably retarded by the multiplicity of gauges, and renders the general manufacture of coal-cutting machinery a very difficult matter. It was decided to forward a copy of Mr. Frith's paper to all the mining institutes in the kingdom, with a request to consider and report on the matter.

A discussion of a very interesting character took place on Mr. J. Hopton's paper, "On Underground Fires," a subject which is of peculiar interest, from the fact of many smouldering fires being in existence in large collieries, forming a constant and unseen source of danger.

A discussion also took place on Mr. Teak's paper "On Safety-Lamps," more especially with reference to the question—What is the actual cause of so many so-called safety-lamps exploding when the point of danger arrives? Other business of a routine character was transacted, and the meeting separated.

## THE MANCHESTER EXHIBITION OF APPLIANCES FOR THE ECONOMICAL CONSUMPTION OF FUEL.

## UTILISATION OF WASTE HEAT FROM BOILERS.

In the Journal of Feb. 28 we dealt with the vertical class of economisers for utilising the waste heat of boilers, as represented by the patents of Mr. Joseph Twibill and Messrs. Edward Green and Son, for heating the feed water, and we will now describe the special features of the remainder of the exhibits in this particular class, which embrace the screw, the horse-shoe, and the letter V-shape in the economiser pipes.

## ANDREW BELL'S ECONOMISER.

First we will deal with the economiser patented by Mr. Andrew Bell, of Carr Hall Foundry, Haslingden, which in place of the vertical pipes consists of a set of spiral coils, constructed to be placed in a flue about 6 ft. high, by about 3 ft. 8 in. wide. There are three coils, which consist of nine twists, with a space of about 2½ in. between the outer surface of each pipe. The pipes have a 4 in. bore, and are cast in half circles, with bored and turned joints, further secured by having an iron thimble running round them. The object in casting the pipes in sections has been that in case of accident the damaged portion of the pipe can be renewed, and this, it is stated, with comparatively very little trouble. The coils are contained in a frame, and as they neither act as supports, nor are at all dependent upon the brickwork, the freest scope is given for the expansion or contraction of the pipes. The economiser is covered in with cast iron plates, supported upon iron pillars, which are a portion of the frame containing the coils, and for the purposes of repair when necessary any coil can be removed by the top plates being withdrawn without disturbing any other portion of the apparatus. The action of the scrapers for cleaning the pipes of soot, or non-conductor, is a peculiar feature, and, of course, from the shape of the pipes, altogether different from that in the vertical economisers. The scrapers are made in two sections, the top half resting upon the pipe by its own weight, and the second half being kept in position close to the under portion of the pipe by means of a balance weight. For the working of the scrapers there is a central shaft, carrying two arms within each coil, to which motion is given by a worm-wheel at the top of the economiser. When the shaft is put in motion the arms catch the scrapers, and propel them along the line of pipes, which is a screw, until they reach the bottom, when the reversing action of the shaft drives them to the top. The scrapers, of which there are only two to each coil, pass up and down twice every hour, the pipes being thus scraped four times in the period. One special feature in this economiser is the greater heating surface which the pipes by their screw-like shape afford, both sides of the pipes

being impinged by the current of hot gases. After passing the front portion of the pipe, the hot air strikes the back of the other half of the twist on the opposite side of the coil, and it is claimed by that this means less piping is necessary for heating the water to the same heat than in the vertical class. Another feature is that the water has a uniform and continuous circulation from the intake to the discharge, the water, after passing up one set of coils, passing down the next in a continuous stream, the effect of which is, it is claimed, that all sediment is held in solution, and is passed through the coils, thereby avoiding any deposit of scale or incrustation.

## F. ERSKINE AND CO.'S ECONOMISER.

This economiser, patented by Mr. Francis Erskine, of Queen's Works, Manchester, is of the horse-shoe shape, and the one exhibited is about 3 ft. high, with a set of ten pipes. These pipes are constructed for ranging along an arched flue, without the usual covering plates, and from their form, beyond diminishing to a certain extent the area of the flue, they offer no further impediment to the draught, and this is claimed by the inventor as a special advantage. Amongst the other advantages set forth is that a thorough circulation of water is maintained through all the tubes, thus preventing the accumulation of scale, that it is also an efficient superheater, that it is easy of access to every part, can be adapted in size to any space, and that the pipes can readily be cleaned. With regard to the last matter, it may be mentioned that in the exhibit there are none of the usual scrapers, although these, if cleaned, can be applied and worked from a shaft, revolving in the centre of the pipes, or the cleaning of the soot can be effected by means of a steam jet. This is effected by running a perforated 2 in. pipe, connected with the boiler, along the centre of the flue, between the superheated, when it is thought necessary to clean the pipes. The inventor, however, prefers hand cleaning to either of the above mechanical processes, as the space along the centre of the pipes affords easy access to every part. With regard to the pipes, we may add that they are like those in the other economisers, 4 in. bore, with socket joints bored and turned, and fitted metal to metal, and tested to a pressure of about 500 lbs. per square inch before leaving the works.

## OLDHAM'S ECONOMISER.

Mr. John Oldham, of Manchester, exhibits an economiser which does not pretend to any of the elaborate construction of the apparatus we have previously described. It consists simply of an arrangement of about 2 in. wrought-iron or copper tubes, constructed in the V or serpentine shape, instead of intercepting the heat in the flue, are placed at the end of the boiler furnaces, where they answer for the bridge above the bars. The feed water enters by a pipe placed underneath the fire-bars at the side of one furnace, passes through the serpentine arrangement of tubing or heater, and then out by pipes placed underneath the fire-bars in the other furnace. The heater thus receives the full power of the flame, and its close proximity to the fire prevents the admission of the soot, so that any complicated mechanical arrangement for scrapers is altogether dispensed with. Amongst the advantages which the inventor claims are that there is no danger from explosion, the bursting of a tube would simply put out the fire, that it acts as a smoke consumer, and can be made to act as a water skimmer. The apparatus certainly has the advantage of simplicity of arrangement, but its efficiency would appear to be somewhat limited.

MECHANICAL STOKERS, AND SMOKE CONSUMING APPARATUS. Mechanical stoking, apart from its other advantages, is, therefore, of great importance in the economical consumption of smoke, and, therefore, it may very properly be dealt with in conjunction with the appliances which aim more directly at this important end.

## DILLWYN SMITH'S MECHANICAL STOKER.

This mechanical stoker, which is exhibited by Messrs. Dillwyn Smith and Co., of Liverpool and London, is specially constructed for burning small coal and slack. The apparatus consists of a large hopper and a cylinder containing an archimedean screw, so constructed and fitted to the boiler as not to interfere with hand stoking when this is found necessary. The fuel is fed into the hopper, and falls direct to the archimedean screw, working right and left, which conveys it to the fans or feeders, which are kept continually revolving, and by this means a regular supply of fuel is kept up to the fire, and as a natural consequence a regular supply of steam is secured, the supply of fuel being regulated by simply raising or lowering the driving band or graduated cone. For this apparatus a large number of advantages are claimed, the more important of which are that it increases the generation of steam, that ordinary slack is made as efficient as steam coal, and that it saves the injury to the boiler which is caused by the constant contraction and expansion of the plates, resulting from the frequent opening of the furnace-door in hand firing. In connection with this apparatus the inventor also exhibits a set of patent fire-bars for enabling the stoker to break up the clinkers without opening the furnace-doors. These consist of long corrugated bars alternately fixed and loose, the loose bars being moved backward and forward by means of a lever outside the furnace.

HANWORTH AND HORSEFALL'S SELF-FEEDING FURNACE. Messrs. Hanworth and Horsefall, of Todmorden, exhibit what is termed a patent self-feeding smoke-burner and fuel economiser furnace, which possesses very considerable merits. In front of the boiler is a hopper to receive the coal, at the bottom of which is a moveable grate, which is moved backwards and forwards at certain intervals, and at the end of this, some one boiler is another grate, moved backwards and forwards in a similar manner. Beyond these grates, and in the flue of the boiler, are a number of tubular wrought-iron bars, filling up the whole of the flue, and sloping inwards towards the interior of the boiler. These tubular bars or water-pipes are flat at the top, and semi-circular below, and are connected at the lower end with the bottom of the flue, and at the top with the front of the boiler at a point near but below the surface of the water, a constant circulation of water being thus produced through the hollow tubes. Between these tubular bars rakes or scrapers, made of wrought sheet-iron of about 14 in. wire gauge, are forced to break up the fire, and move it forward towards the boiler. The practical working of the furnace is as follows.—The fuel being placed in the hopper is moved forward by the first grate, by which it is carried to the second grate, and by this to the tubular bars. The rakers then push it forward, and in doing so break it up, and allow the air to pass through, and thus ensure combustion. The smoke in passing from the grates over the tubular bars is consumed, and the feed water for the boiler is also heated in the bars. The apparatus is certainly a very efficient one for the purpose for which it has been designed, and the results of the trials which have been made speak very highly in its favour. Mention has been taken that the smallness of the tubular bars render them liable to be speedily choked up with the scale, but an easy means of cleaning them is provided.

## YOUNG'S SMOKE PREVENTOR.

Messrs. Wm. Young Brothers, of London, exhibit a patent smoke preventor, with spiral bars, which is adaptable to every description of furnace, grate, or stove. The smoke preventor in this instance is fixed to an agricultural engine, and is composed of spiral bars, mounted on an axle moved by hand each time fresh coals are required, and the object is to introduce the fuel at the bottom of the fire under the burning coals, by which means the production of smoke is prevented, whilst, every combustible element being consumed, a material increase of heat is obtained, and a considerable saving of fuel consequently effected. More minutely described, the operation of the apparatus is as follows.—The spiral bars consist of a species of double threaded open work screw, which threads at the one end being left hand, whilst the two at the other are right hand, the whole forming one fire-feeding implement. This implement is carried on transverse rollers in bearings attached to the outside of a hinged door-frame. Filling up the space left at the bottom of the back of the fire-box, and is placed over a hopper-plate, the lower part of which is curved so as to form a sort of "race" beneath the feeding implement. This "race" is continued within the fire-box by a wrought-iron plate, from the upper part of which start the fire-bars. These bars, at a sharp angle (about 38°), and their upper ends abut against the fire-box plate. Assuming that a fire already exists in the fire-box, the fresh fuel, introduced by placing it in the hopper in contact with the feeding implement, is driven on being turned by the hand by means of the spiral bars, and is forced into the lowest part of the fire-box, and delivered into the sloping wrought-iron plate, up which the fuel slides, and thus the fire is fed with fresh coal, not by placing it in the ordinary manner upon the top of the burning fuel, but by inserting it below the fuel. This method of feeding fires has been found most successful in preventing smoke, even with bituminous smoke coal, whilst greater economy is secured in the consumption of the fuel.

APPARATUS FOR THE CONDENSATION OF SMOKE. Messrs. Heslop, Wilson, and Budden, of Newcastle-upon-Tyne, and Messrs. Johnson and Hobbs, of Manchester, exhibit the model of a simple and comparatively inexpensive apparatus for the condensation of smoke and gases. The apparatus is constructed on the paddle-wheel principle, with an addition of projections on the blades to produce a spray of fine divided water, which falls through a series of nozzles, composed of laths, bridle-wood, shingle, or other material, and is required for the particular substances to be operated upon. The smoke and gases in passing from the fire are arrested to the apparatus and condensed, the products being afterwards, instead of becoming a nuisance, capable of utilisation in various ways. The apparatus is applicable to any process for preventing the emission of blacks, gases, and vapours of all kinds from furnaces, coke-ovens, alkali and metallurgical works, and the makers claim that the great expense of building large stacks of chimneys can be done away with by the use of this machine.

## BURKITT'S SMOKE CONSUMING APPARATUS.

Although the inventor in this case, Mr. P. S. Burkitt, of Oldham, only exhibits a drawing, the principle of his invention is well worth notice. The inventor starts on the assumption that for the perfect consumption of smoke it is necessary to have some mechanical contrivance to convert the unconsumed carbon necessary amount of heated air or oxygen, which for perfect combustion of the constituents of coal, is found to be in proportion to nine volumes of air to one volume of gas from the coal. This he proposes to do by means of hollow bars, connected with an air box, forming the bridge or arch over the fire; he thus gets heated or red hot air supplying the necessary oxygen, which meeting the unconsumed carbon or smoke, and mixing with it in a chamber, which is formed by fixing a perforated fire-plate screen, the smoke and gas are impinged against the red-hot screen complete the mixing, and also ignite the further heated gas. Should some unconsumed smoke or carbon pass through the screen from the first chamber, it is intercepted by a dish or conical-shaped screen, having only a central opening upon which the chimney directly acts. The smoke being heavy falls to the bottom of the second chamber, and rising, meets the flame passing through the orifice which consumes it, the door in front of the flame being shut when the gases are consumed.

HOLLOWAY'S PILLS.—The truest philosophical spirit of enquiry led to the discovery of this priceless medicine, and the most unselfish labour and expense have been incurred in bringing so great a boon to the knowledge and welfare of the afflicted throughout the world. Every invalid who can read will understand the plain directions in his own language which are folded round the pills, and should be taken in the doses and at the times distinctly specified, and whilst great attention should be paid to diet and many minor matters, all that however, are important, in as much as they augment the curative power of the pills, prevent them from disagreeing with the most delicate, and spare time and money.



LONDON GENERAL OMNIBUS COMPANY.—Traffic receipts for the week ending March 8, 1932/3. 13s. 4d.



## BRITISH MINES.

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is 3 ft. wide in the flat-road shaft, which is now 3½ fms. below the 25, where it is present price, worth 18¢. per fathom; this is a fine-looking lode, and, valued at the lode in the 25 east, may be considered as highly encouraging for the depth. The price for driving the latter is 30s. per fathom. In the 11, west of engine shaft, the lode is 2 ft. wide, and worth 11¢. per fathom. The number of men on tribute have increased, and new pitches are eagerly sought after.

**SOUTH PRINCE PATRICK.**—J. Jones, March 11. In my last report I mentioned a discovery of good lead in the south driving in Parry's lode while Mr. Richardson and myself were underground, but it only held in the driving for a very short distance, and we drove some yards through rather inferior ground, but on account of the foulness of the air I was compelled to put the men to rise in order to form a communication with a drift above us, when we found the ore to be much stronger than it was in the freestone of the level, and I am glad to say that it still continues to look very rich; we have been driving lead from this end to surface on Monday, yesterday, and to-day, and shall do so to-morrow also. In the north end we continue to make very good progress with the down hill level

day laid, with value of the different levels: Canner Lode: Pressure shaftmen engaged cutting trip plat at the 50, as soon as this is completed they will lay down the tramroad in the 50, south-east and north-west of shaft. The 50, to drive south-east of Pressure-shaft, by six men, at 5 $\frac{1}{2}$  fs. per fathom; the lode is 2 feet wide, producing saving work for tin; we have an increase of water in this level, which we think indicative of the near approach to Pink lode. One stop in the back of this level, to six men, at 2 $\frac{1}{2}$  fs. per fathom. One stop, to two men, at 2 fs. per fathom; worth on an average 8 $\frac{1}{2}$  per fathom. The 50, to drive north-east of Pressure shaft, by two men, at 3 $\frac{1}{2}$  per fathom; lode 18 in. wide, and worth 10 per fathom. One stop in the back of this level, to four men, at 2 $\frac{1}{2}$  fs. per fm.; lode 3 $\frac{1}{2}$  ft. wide, and worth 8 $\frac{1}{2}$  per fathom. The 40, to drive north-west of Pressure-shaft, by four men, at 4 $\frac{1}{2}$  per fathom; lode 2 ft. wide, and worth 5 $\frac{1}{2}$  per fm. The 20, to drive south-east of Pressure-shaft, by four men, at 6 $\frac{1}{2}$  per fathom; lode 2 in. wide, producing saving work for tin. — Pink Lode. No. 1: winze to sink in the east of the canner, by six men, at 1 $\frac{1}{2}$  per fm.; lode 18 in. wide, worth 20 $\frac{1}{2}$  per fathom. No. 2: winze to sink on the 40, west of the canner, by six men, at 1 $\frac{1}{2}$  per fathom; lode 13 in. wide, producing some very rich stones of tin.—Tribute

and charcoal. The inner boiler is intended to contain water, steam, or heated the inner iron or brick-work retort-pan. These inner boilers and retorts are lined with air, water, and steam-pipes, when boilers, and with condensers when as retorts. The inner retort is provided with a door at the top for charging the coal, and a door for delivering through the bottom its contents into a cooling bin or vault beneath. Another essential feature of this invention consists in an arrangement for the purpose of drying peat, whether compressed or otherwise, for use. Within a building, called the peat-house, is erected a series of retorts as herebefore described. These are placed in positions down and close to one side of the peat-house, through the wall of which issue shoots from the retorts for the purpose of carrying off the ashes to trucks outside. The iron or glazed delivery pipes from the retorts conveying the vapours are led over the lower surface of the peat-house, with the object of condensing the available heat thrown off therefrom. The shaft is erected at one end of the building having a bell mouth, through which a current of steam arising from the moist peat is sucked out by a fan. Inductance is provided for the necessary admission of air from without the building. The peat is dried by means of an endless wire-rope worked over pulleys set in motion by



endless bands or chains without the building, and worked to any speed required. To the wire-rope at short intervals is attached what he calls a "traveller," carrying one peat on each side.

### COAL LANDS FOR SALE IN NEW SOUTH WALES.

**THE UNDERSIGNED HAS FOR SALE FOUR PROPERTIES, of ONE THOUSAND ACRES EACH, near SYDNEY, N.S.W., each containing from 20 to 60 feet of good coal in from Two to Five Seams. Price, £10 per acre.**

Full particulars, with references, on application to—  
**C. MITCHELL, Macleay-street, Sydney, N.S.W.**

**FOR SALE, in BELGIUM, the FOLLOWING CONTRACTORS' PLANT:—FIVE LOCOMOTIVES; FOUR LOCOMOBILES, from 12 to 15 horse power, in good condition; FIVE of Gwynne's PUMPS; 50 TON TRUCKS, for earthwork and ballasting; 130 TILTING TRUCKS, of State gauge, and holding about 100 cubic feet; harness, traces, &c.; sundry tools and implements. For prices, &c., apply to E. BELLEFLORES, 10, London-street, City, E.C.**

**RAILS FOR SALE, in great variety of sections (perfect, slightly defective and second-hand), 14 to 82 lbs. per yard. Also CHAIRS and the other NECESSARY FITTINGS. Apply to BREYER, RICHARDSON, and Co., Newcastle-on-Tyne.**

**STEAM ENGINE FOR SALE. A POWERFUL DIRECT-ACTION VERTICAL CONDENSING ENGINE, by RENNIE, 32 in. cylinder, 6 ft. stroke. It is in good condition, and may be seen at work. To be sold at a low price. Apply to Mr. J. M. DREW, Bridge Mills, Silvertown, Cullompton, Devon.**

**MORTGAGES ARRANGED ON COLLIERIES, WORKS, &c., in connection with personal security; also, LOANS for carrying out bona fide undertakings. Principals or their solicitors may address "H. A. C.," care of Henry Greenwood, Advertising Agent, Liverpool.**

**COAL AND IRON IN THE UNITED STATES.**—During the year ending Nov. 30, 1873, the Eastern (Massachusetts) Railroad Company laid 2392 tons of iron rails, and 2507 tons of steel rails. On the main line between Boston and Portsmouth the company has now 43 miles of steel rails. The total receipts of coal at Pittsburgh, Pennsylvania, last year were 115,065,146 bushels, a total showing a decrease of 8,518,807 bushels as compared with 1872; the total receipts of coke were 34,236,500 bushels, against 43,927,965 bushels in 1872. The production of coal on the Pacific Coast of the United States is increasing; the Mount Diablo Mines have averaged 175,000 tons per annum for two years past. Bessemer steel rails are now manufactured at eight establishments in the United States, and the annual production can be carried, if need be, to 200,000 tons. The coal extraction of Pennsylvania thus far this year exhibits a decrease as compared with the corresponding period of 1873.

**LEAD MINES IN WALES (Montgomeryshire).**—At the Van Mine, in the 75 cross-cut, so far as seen the lode is very rich, which is a most important feature for the future of this mine. At the Dylife Mines, some six miles from the Van Mines, a most important discovery has been made this week on what is called the Esgrigalode lode, which very much resembles the Van lode. The Dylife Mines are opening out well, and bid fair to resume at no distant period their excellent profits and good dividends to the shareholders. Now that their dressing-floors are being put in good order their present returns of 80 tons monthly will soon be increased to 100 and 120 tons, and gradually increased. This mine may be considered one of the best lead mine investments of the day at the low price of 6s. to 7s.

**CAPT. POLGLASE, who recently resigned the management of the Great Laxey Mines, has been appointed the manager of the Caldbeck Fells Consolidated Lead and Copper Mines, Cumberland.** Previous to his leaving for his new destination, the Laxey Mines presented to him Dr. Adam Clarke's "Commentary," in six volumes, handsomely bound in Morocco; a pocket Bible, and Wesley's Hymns, in one handsome volume; a massive gold pencil case and pen, &c., in admiration of his mining abilities, of his love of fancy play, and his manly conduct amongst us. Not only do we as a body of miners highly respect him, but he has won the esteem of the parish, and also the inhabitants of the island, so far as he is known. We, therefore, heartily wish him every success in his new undertaking. —LAXEY MINERS: Laxey, March 3.

### HANDBOOK OF PRACTICAL TELEGRAPHY.

There can be but little new to state by way of eulogy with respect to a work which, like Mr. Culley's, has already reached its sixth edition; and in estimating its present value it will suffice to state that it has been so revised and enlarged as to embrace a full record of the progress made in the art of telegraphy up to the date of publication. The object of the volume\* is to furnish information to members of the telegraph service, and to others interested in telegraphy, concerning the electrical laws upon which the system depends, the methods of discovering faults, the practical management of apparatus, the construction of a line, and the leading principles of submarine telegraphy. The author states that he has attempted, and there can, we think, be no question as to the success of the attempt, to supply in some measure that technical knowledge which has hitherto been attainable only by means of verbal instruction or actual experience; and with a view of rendering the work more acceptable to practical men, he has purposely avoided scientific terms and formulae, especially in the earlier portion of the work, and elsewhere when it has been possible to express his meaning without their use.

By way of introduction, he gives a brief, yet interesting, sketch of the history of the system in this country. The electric telegraph was introduced by Cooke and Wheatstone, whose first joint patent was granted in 1837, in which year the earliest demonstration of the practicability of the system was made by the establishment of an experimental circuit between Euston square and Camden town, on the London and Birmingham Railway. The first actual working telegraph was erected in 1838 between Paddington and West Drayton, on the Great Western Railway. Cooke and Wheatstone's patents were purchased by the Electric and International Company, of which Mr. John Lewis Ricardo was the Chairman, and in 1840 the company was incorporated by Act of Parliament. No assistance whatever was granted by the Government to the Electric and International Company, and it was only after several years of adversity that the undertaking became firmly established. In the first instance the double needle instrument was used for the more important circuits and the single needle for the less important. The double needle was superseded after a few years by the chemical recording instrument of Alexander Bain, and eventually the Bain gave way to the Morse key writer, but the single needle held its place as the instrument of the great coast-to-coast line, which it kept in working order. Between London and Manchester, Glasgow, Edinburgh, and Newcastle the Wheatstone telegraph apparatus was used. When the success of the telegraph had become thoroughly established several other companies started. The Magnetic Company was formed for the purpose of introducing Healey's needle instrument, in which the electricity was obtained from a permanent magnet instead of from a battery, but the manipulation of the magnet was found to be too laborious, and it was abandoned for the battery. This needle instrument was superseded for important circuits by Bright's bell, which produces the signals of the needle code by strokes upon two bells of different pitch, and has the great advantage over the needle that it leaves the hands free for writing the message received. Lastly, the United Kingdom Company was formed; it used the Morse and Hughes only, and never employed the needle instrument. Several of the railway companies transmitted messages for the public.

After stating the sources of electricity, Mr. Culley explains resistance and the laws of the current, and the measure of the definition that resistance is the obstruction offered to the current by the bodies through which it is made to pass, and is the opposite, reciprocal, or converse of their conducting power, or conductivity, and that when resistance is so great as to approach infinity it becomes insulation, and may be taken as an example of the conductance and accurate style of the entire book. Magnetism and electro-magnetism, induction—static and dynamic, atmospheric electricity and earth currents, insulation, constructing telegraph lines, testing, apparatus, &c., are each treated of in separate parts, the result being a volume which is as complete a treatise as could be desired, whether by practical manipulators or those desirous of merely acquiring the full set of particulars procurable in connection with the art of telegraphy.

\* "All in Book of Practical Tel. g. a. day." By Mr. R. S. CULLEY, M. Inst. C.E., Engineer in Chief of Telegraphs to the Post Office. Sixth edition. Revised and enlarged. London: Longmans, Green, Reader, and Dyer, Paternoster-row.

**NEW EXCAVATOR.**—Mr. R. STONE, of Liverpool, has patented an improved pick excavator and discharging elevator for excavating for foundations, surfacing roads, excavating clay, sand, soil, and other like substances. A pick excavator and discharging elevator, according to this invention, consists of a circular disc, or discs, which are carried on a shaft mounted in suitable bearings carried on a truck or wheeled frame. The disc or discs are so mounted that they will revolve freely, upon suitable power being applied. The discs are fitted with radial ribs or guides; in these slots or guides are sliding weights, or metal blocks, so arranged that picks, bolts, or other tools may be lowered or otherwise attached thereto. These weights and picks are so arranged that they fall down the slots or slots in the discs as the discs revolve, and the picks, bolts, or other tools are thus lowered into the soil to be excavated. The picks, bolts, or other tools are so arranged that they can be removed for shipping by merely unscrewing or attaching the same from the weights. The apparatus is driven by a suitable system of cog wheels or straps and pulleys.

With this week's Journal a SUPPLEMENTAL SHEET is given, which contains—Original Correspondence: Mining Monopolies (H. Nasmyth); Mining in New South Wales (R. Adams); Gold Mining in New Zealand (G. F. Hosking); Colorado Mines as a Field for Investment (J. Schmale); New Queensland Mining Company (J. Thompson); Lake Superior Copper Mines; Mining at Lake Superior; Lead Mining in Wales—the Machynlleth District; Observations on Mining (R. Knapp); N. Ennor on Lime Formation; Miners' Pay—the Thirteen-Months System; Remarks on the Correspondence in the "Mining Journal"; Legitimate Mining; Perran Consols Mine (W. Ward); Eldorado Gold Mines; Nova Scotia Gold Mining—Dyflife Mining Company—Foreign Mining and Metallurgy—The Quick-silver Trade, &c.—Meetings of the Grosvenor, Tretell, Carigan, Rock, Mount Dalby, Kirk Michael, Trumpet Consols, Darlington Iron, Bagworth Colliery, Imperial Brazilian Collieries, New Dolcoath, South Cleveland Iron-works, Crenver and Wheel Abraham, and Blinman Companies.

### The Mining Market: Prices of Metals, Ores, &c.

METAL MARKET—LONDON, MARCH 13, 1874.

COPPER.				IRON.			
Best selected.	per ton.	£ s. d.	£ s. d.	Bars Welsh, in London	per ton.	£ s. d.	£ s. d.
Tough cake and tile.	88	0	0	Do., to arrive	11	7	6-11 15
Sheeting & sheets.	94	0	0	Nail rods	12	0	—
Bottoms	97	0	0	Do., in London	12	0	—
Old	85	0	0	Bars, ditto	12	10	0-13 0
Burra Burra	87	0	0	Hoops, ditto	13	15	0-15 0
Wire	per lb.	0	1 0 3/4	Do., at works	11	0	—
Tubes	0	1 0 3/4	1 1	Hoops, ditto	12	15	0-14 0
BRASS.				STEEL.			
Sheets.	per lb.	10d.-11d.		Pig No. 1, in Wales	5	0	0-6 10 0
Wire	10 1/2d.-11 1/2d.			Rehmed metal, ditto	7	0	0-8 0 0
Tubes	11 1/2d.-11 3/4d.			Bars, common, ditto	10	5	0-11 0 0
Yellow metal sheeting	8 1/2d.-8 3/4d.			Do., mech. Tynes & Tees	11	0	0-11 10 0
Sheets	8d.-8 1/2d.			Do., railway, in Wales	9	5	0-10 0 0
SPELTER.				STEEL.			
Foreign on the spot.	23	10	0	Do., Swed. in London	18	0	0-19 0 0
to arrive	23	10	0	Do., f.o.b. Tynes or Tees	4	10	0-5 10 0
ZINC.				STEEL.			
In sheets	30	0	0-31 0 0	Do., Nos. 3, 4, f.o.b., do.	5	0	0-5 5 0
QUICKSILVER (p. bot.)	19	15	0	Railway chairs	5	0	0-5 5 0
TIN.				STEEL.			
English blocks	£ 98	0	0	Do., spikes	12	10	0-14 0 0
Do., bars (in bars)	99	0	0	Indian Charcoal Figs, in London	p. ton	10	0-12 0 0
Do., refined	100	0	0	LEAD.			
Banca	103	0	0	English Pig, com.	21	15	0-22 0 0
Straits	91	0	0-94 0 0	Ditto, L.B.	22	0	0-—
TIN-PLATES.*				Ditto, W.B.	23	10	0-—
IC Charcoal, 1st qual.	£ 17	0	1 10 0	Ditto, sheet	24	0	0-24 5 0
IX Do., 1st quality	2	3	0-2 5 0	Do., rehmed lead	30	0	0-32 0 0
IC Do., 2d quality	1	15	0-1 17 0	Ditto, white	30	0	0-32 0 0
IX Do., 2d quality	2	1	0-2 3 0	Ditto, patent shot	26	10	0-27 0 0
IC Coke	1	0	0-1 11 0	Spanish	20	10	0-21 0 0
IX Coke	1	0	0-1 17 0	At the works, 1s. to 1s. 6d. per ton less. Add 6s. for each X.			
Canada plate, p. ton	18	10	0	Terne-plates 2s. per box below tin-plates of similar brand.			
Ditto, at works	18	10	0	REMARKS.—The general condition of the trade remains unaltered, and business in every department still continues very limited. Prices generally have not undergone much fluctuation, but in some few instances slight deviations have occurred. Speculation for a rise is only entered upon in very exceptional cases, and operations of a speculative character are mostly connected with the probability of lower prices ruling. So far as it is possible to form an opinion, it would seem that this is the most likely result. The price of fuel is on the decline. Buyers show a strong determination not to enter upon any fresh engagements that can be avoided, except at very considerable reductions; and as these reductions are chiefly based upon the prices realisable abroad, it would seem reasonable to suppose that manufacturers must sooner or later submit to such concessions as shall meet the requirements of consumers in general, and shippers to foreign markets in particular.			

**COPPER.**—The market, which closed firm last week, opened with a firm appearance on Monday last, and business was done in Chili bars, g.o.b., at 78s. 10s. cash, 78s. 5s. one month, and 79s. 10s. three months' prompt. Wallaroo changed hands at 88s. net cash. The Swansea Ticketing was reported on Tuesday: 1000 tons ore sold at an average price of 14s. 10d. per unit for 20s. per cent., and Cape ores 16s. 5d. The market for Chili bars was firm and active. For cash parcels, g.o.b., from 78s. to 79s. 15s. was given, and Wallaroo was sold at an advance of 10s. over the price of the previous day. On Thursday there was a still further improvement, and g.o.b. changed hands at 79s. cash, 79s. 10s. six weeks, and 80s. three months' prompt. Wallaroo, 88s. 10s. to 89s., and Burra 87s. 10s. Yesterday, the market maintained the firmness of the previous days, and Chili bars sold—g.o.b., cash, 79s. and 79s. 10s., also 80s. three months. Picked brands, 80s. cash; Wallaroo, 88s. 10s. cash, and 90s. three months. To-day picked brands have been sold at 80s. to 80s. 10s. The transactions reported during the week amount to rather more than 1100 tons, of which 900 tons are Chili bars and the remainder, with the exception of 200 tons Burra copper, are Wallaroo. The business at present doing in copper appears to be sufficient to keep the market steady, but beyond this there does not appear to be any feature in the market to lead to the conclusion that any important advance in price is likely to occur. There is certainly no pressure to sell, but from the amount of business reported during the past week, it may be gathered that there is no great desire to buy, and until there is a general resuscitation in trade it is not probable that much improvement may take place. Yellow metal remains at previous quotations. Some few orders have been executed during the week for India.

**IRON.**—There is no reason to expect that there will be any alteration in the state of the iron trade until the end of the first quarter of the year, which is now close at hand. Nothing could have been more disappointing and delusive than the hopes which at the close of 1873 were entertained regarding the resuscitation of the trade during the early weeks of the new year. Indeed, as the present year advances, the expectations of improvement seem to recede. The one chief cause of this protracted period of inaction is, doubtless, attributable to the high prices which have persistently ruled so long. Business, it is true, has been done, and business is now being transacted day by day, but not upon a scale of any magnitude. Buyers can only be found to come forward just to such an extent as to meet requirements which can brook no delay; but so soon as prices are re-adjusted upon what appears to be a more satisfactory basis business will once more revive. It is not that the demand for iron for the various purposes to which this metal is applied is less than heretofore, but that the existing demand is kept in abeyance because of the improbability of paying the prices asked. The gradual fall in the price of coal which has been noticed of late has already exercised an appreciable effect upon quotations, but not to such an extent as to influence buyers to come forward more freely. Coal may still find a lower level, and thus enable smelters to sell pig iron at lower rates than those now current. But this of itself will not suffice—there must be a re-adjustment of wages, as well as in the cost of fuel, and when this is accomplished manufactured iron may be sold at such a price as shall bring about the desired activity.

The report from the North of England is to the effect that the publication of the ironmasters' stock returns has rather depressed the market, and that otherwise no material alteration has taken place in the price of pig iron, and sales are still effected at about the following rates:—No. 3, 75s.; and No. 4, 72s., usual terms. Some makers still prefer holding to selling at these rates, but as stocks are increasing, and sellers are ready to do business at current quotations, it does not appear probable that holders for higher rates are likely to realise their expectations. The general aspect of the market is such that consumers prefer buying only to the extent that is absolutely necessary to carry out their pressing business, and they are looking forward to being before long in a position to purchase upon more favourable terms. The opening of the rivers in northern latitudes may afford some increased vitality to the trade by the provision of an additional outlet, but the machinery for production is now so much increased to what it used to be that the demand must be excessive and far greater than it is likely to prove to keep pace with the expected output. The increase of stocks in the Cleveland district, to which reference has been made, amounts to nearly 9000 tons during the past month, making a total of 101,199 tons stocks in makers' hands, a larger quantity than has been recorded within the past three years. On the other hand, shipments abroad during the past month did not amount to 10,000 tons, and show a decrease of 11,365 tons, as compared with those of February, 1873. The deliveries for Scotland are still on a larger scale than formerly, and show an increase of 6000 tons nearly over the similar period of 1873. All descriptions of finished iron are dull of sale. This is said to be in some measure accounted for by the competition of the Belgian and Welsh makers, who are said to be prepared to undersell to the extent of 10s. to 15s. per ton; but inasmuch as in Wales at all events similar complaints are made, it seems that a general slackness in demand is the cause of the almost universal dullness which prevails. The market for Scotch pig-iron opened quiet on Monday, and business was done from 94s. down to 91s. 6d., at which prices the market closed. A still further decline marked the course of the market on Tuesday, the lowest price of that day being 88s. 9d., closing with buyers at 89s. per ton, and sellers 91s. per ton higher. Wednesday's market was irregular, opening at 88s. 3d., and advancing to 91s. 6d., and closing at 91s. On Thursday the market was dull, but the small amount of business which transpired showed a slight advance in quotations, the closing price being 92s. To-day the market has been firm, and business done up to 92s. 9d.

**SHIPMENTS.**  
Week ending Mar. 8, 1874 ..... Tons 12,134  
Week ending Feb. 22, 1874 ..... 8,684  
Decrease since Dec. 25, 1873 ..... 3,750  
Total decrease since Dec. 25, 1873 ..... 31,808  
LEAD remains unaltered, good soft English pig being quoted at 21s. 15s. to 22s.  
QUICKSILVER is firm at 19s. 15s. per bottle, at which price transactions of some importance have taken place.  
TIN.—The market for Straits has been steady throughout the week, and prices are firm at about 91s. cash and 91s. for distant arrival.

TIN-PLATES are not in much demand. IC Coke stands unaltered at about 29s.

Messrs. Vivian, Younger, and Bond.—Since our last issue prices of COPPER have advanced for Chili bars about 28s., and for Australian copper about 10s., per ton, but the business done has been only limited, and consumers continue to buy sparingly, and only to cover their immediate wants. We estimate the sales for the week at about 1000 tons of Chili bars and 300 tons of Australian. Good ordinary brands of Chili bars have sold at from 78s. up to 79s. cash, and at 78s. 5s. to 80s. with prompt, while a small lot of picked brands were sold at 80s. cash. Wallaroo changed hands at from 88s. to 88s. 10s. cash, and at 90s. with three months' prompt; Burra having realised 87s. 10s. cash. There is only a small demand for manufactured copper, which has been checked by the makers asking higher prices than they were willing to accept a week ago. Altogether, though the price of raw copper had advanced a little, the reports from manufacturing districts are so dull that the prospect is not considered encouraging.—TIN further declined, and 92s. 10s. was accepted for Straits; but there is a slight rally, and about 50 tons have changed hands at 94s. cash. For forward delivery, however, business has been done at 90s. 10s. for shipment by steamer, March-April and May; and with the heavy quantities coming forward, it is probable that the recent advance will not be maintained.

Messrs. Henry Rogers, Sons, and Co.—There have been some considerable purchases made during the week, both on the spot and for two and three months forward, and the tone of the market generally has improved; consumers, however, have bought as yet but sparingly, and principally of English, which has ruled cheaper than fine foreign. There is very considerable indisposition shown on the part of importers and holders generally to realise even at the 29s. advance in quotations show; the feeling being that copper is too cheap now considering its position; at the same time buyers are not very eager to pay higher prices. The market may be considered very sensitive, rather than very buoyant.

The MINING SHARE MARKET continues quiet, and there is very little change to notice since last week's report, either in the way of quotations or in business transactions, beyond the fact that a slightly better feeling prevails; and on Friday, notwithstanding the settlement of the fortnightly account, a demand arose for two or three mines at advanced prices. Those chiefly dealt in have been South Frances, Van Consols, Cook's Kitchen, Penstruthal, West Chiverton, Pennerley, Wheel Crebor, Tankerville, West Tankerville, Dolcoath, East Lovell, Old Treburgett, and a few others.

A calculation has been made that during the last two years the mines of Cornwall have been depreciated in market value nearly two millions sterling; the names of 17 dividend mines alone are given, upon which the depreciation is 1,319,283s. And, as this has been caused partly through the importation of Australian tin, the simple question which many ask themselves is—Can this importation go on? The general impression among Cornishmen is that at present prices it cannot, except at a great loss to importers, and that when the present stocks in hand are worked off the price must advance. When the Australian tin was first brought to this country it realised 91s. to 94s. per ton, and now the best ore only fetches 57s. per ton; and this price for the best, and a much lower one for inferior qualities, entails a serious loss. There is, then, some hope yet for those Cornish mines that are able to pull through the present times; and the market, thoroughly weeded of weak concerns, will offer great bargains for investors.

Dolcoaths are 32s. to 35s.; Carn Brea, 22s. to 27s.; Cook's Kitchen improved to 6 to 7; Tincroft, 24 to 26. East Lovell, 10s. to 11s.; at Tregonnebris part of set the lode in new engine-shaft is worth 15s. per fathom; at Fatwork the lode below the 100 fm. level never looked better. The present returns of tin are 3 tons weekly.

North Roskear adventurers finally decided, at the special meeting on Thursday, to sell the mine and materials, and wind-up the affairs of the company. Mr. T. T. Whear was instructed to offer the property by auction on March 25, and thanks were voted to Messrs. Pendarves and Enys, the lords, for their kindness and liberality during the working of the mine. At the Wheel Seton meeting, held here on Thursday, it was resolved, in consequence of the stoppage of North Roskear, to offer the mine for sale as a going concern, and to wind it up. The present returns of tin are 10 tons per month, and the loss 200s. per month. East Pool, 4s. to 5s.; at the meeting here the accounts presented showed a profit in two months' working of 81s. 10s. 2d., and a balance of 103s. 3s. 1d. against the adventurers. This, it is presumed, is irrespective of the "suspense account," of which nothing is heard now, but which is supposed to be a heavy debt in abeyance. The tin sold and credited in this account realised 3389s. 0s. 5d. Trumpet Consols, 1 to 1 1/2; at a special meeting held at this mine a call of 2000s., or 10s. per share, was made, and the tin in hand (40 tons) was stocked for a better price. At present price it would not pay costs. The mine is reported to have improved in the 173 west, where the lode is worth 20s. 2d. per fathom. At the 153 above there was a good lode for 70 fms. in length. Roman Gravels, 15s. to 16s.; the Roman vein, or 75s. is worth 30s. per fathom north and 70s. per fathom south; the 80, north of Glover's winze, 40s. per fathom; the 72, south of Corfield's, 9 tons of lead per fathom.

Crenver and Wheel Abraham accounts show a loss on six months' working of 4939s.; the ores sold in that time realised 6652s.; the costs were—labour 7060s., materials 4531s.; the balance of assets in favour of the company—taking credit for tinstone unsold, 875s.—is 6722s. West Tolgus have been rather enquired for in Cornwall at 20 to 22s.; the lode in the bottom of the mine is said to be turning out 17 tons of copper ore per fathom. Bog, 5s. to 6s.; Old Treburgett, 3 to 4; Great Laxey, 11 to 12; Pennerley, 1 1/2 to 1 3/4; Perkins Beach, 3 to 4; Rookhope Valley, 17s. 6d. to 17s.; the accounts of this company show a balance of assets over liabilities of 4895s. 12s. 8d., charging up costs to January last; the ores sold from commencement of 13s. 12s. 5d. per ton, or 4562s. 10s.; the monthly costs and merchants' bills 12,835s. 12s. 2d., dues 586s. 6s. 10d., directors' fees 87s., London office 387s. 10s. Capt. Arthur Waters is of opinion that if worked energetically the mine will prove remunerative to the company. Plympton, 3 to 4; Prince of Wales, 3 to 4; Hingston Down, 20s. to 25s.; this mine continues productive for copper, and is about meeting costs.

Wheel Crebor, 2s. to 3s.; 50 tons of the ore now sampled yields the high produce of 10 1/2—the best ore ever yet raised from the mine. South Roman Gravels, 3 to 4; one of the reasons for raising fresh capital here was the erection of a more powerful pumping-engine, though it was expected the small one then at work would enable the lode to be cut into at the 20 fm. level, below adit, so that its character and future prospects could be seen. This was done some weeks ago, and the lode has proved to be large, and of the most favourable character for the production of large quantities of lead in depth. The water, however, has increased, as expected, beyond the power of the portable engine, and the directors have decided on putting up another at once. This may take three or four months to accomplish, but the delay has been well accounted for in the knowledge gained beforehand of the valuable character of the lode in the 20, and the low price of engines; and, in the meantime, the cross-cut is to be pursued towards the Roman Gravels lode. Dylife, 6s. to 7s.; the mine sold 80 tons of lead this week, at 12s. 15s. 6d. per ton, and a good discovery reported at the Esgrigalode lode, worth from 30s. to 40s. per fathom. Van Consols have advanced to 4s. 5s.; the lode in the 15, east of Gundry's, is 15 ft. wide, worth 6 tons of lead ore per fathom. The winze is worth 7 tons per fathom. Penstruthal, 3 to 4; the lode at Highburrow shaft, below the 22, is worth 20s. per fathom for tin. South Frances shares have advanced to 11, 13s.; the lode in the 124 cross-cut has been met with, and, as far as seen, is worth at the present price of tin 25s. per fathom. Bedford United, 20s. to 25s.; the lode in the midway level maintains its value, and there is every prospect of returns meeting expenditure after the coming meeting. Tankerville shares have advanced to 8s. 9s.; Van, 30 to 32s.; West Chiverton, 4s. to 5s.; West Tankerville, 1 1/2 to 2; Wheel Grenville, 3 to 3 1/2; Wheel Kitty (St. Agnes), 7 to 8; West Esgrigale, 2s. to 2 1/2.

Among Foreign Mines—Chontales, 3 to 1; Don Pedro North del Rey, 3 to 4; Emma, 1 1/2 to 2 1/2; Flagstaff, 2 1/2 to 3; Last Chance, 1 to 1 1/2; Tocoma, 1 to 1; Birdseye Creek, 3 to 3 1/2; Sweetland Creek, 4s. to 5s.; Cedar Creek, 2 to 2 1/2. Rio Tinto, 6s. to 6 1/2; the general manager in Spain reports that the railway is making rapid progress; 2000 men are at work upon it, and he urges that the sleepers and iron bridges should be sent out. They have 15 kilometres ready to be laid, and good progress is being made at the mine in removing the overburden at the rate of 300 cubic metres per day. The pro-



duce from precipitation is not less than 100 tons of rich precipitate per month, yielding 70 to 75 tons metallic copper.

The Market for Mine Shares on the Stock Exchange during the week has been moderately active. Home lead mines have been fairly supported. Van and Roman Gravel have found buyers at quotations. Hydraulic mine shares remain in steady request, especially Birdseye and Sweetland Creek. Other American descriptions have been comparatively neglected, with the exception of Emma, Richmond, and Eberhardt, in which a good deal of business has been transacted; as to Emma, the price has been steadier than for some time past. The fortnightly settlement was concluded yesterday and its progress has, as usual, somewhat checked new business.

In Foreign Mines, the chief feature of the week has been the unsatisfactory rumours in connection with New Quebrada. It is pretty generally understood that an official report from Mr. Richardson, the manager, has been received by the directors, wherein he states that a series of experiments upon the ores produced an average of less than 10 per cent., hitherto it has been supposed the average yield would be 35 to 40 per cent., and upon this estimate has been incurred all the expenditure in the development of the mine and the construction of the Bolivar Railway, the works in connection with which are said to be progressing in an unsatisfactory manner, if, indeed, they are not entirely stopped.

The Metal Market generally has been more active, but business continues dull. Copper firmer, especially Chili and Australian. Tin has further declined, but subsequently somewhat rallied; tin plates in but little demand. Lead steady. Spelter inactive.

Emma shares have been steady, at 2 to 2½, low prices attracting purchasers; an influential syndicate is in course of formation, who purpose qualifying as shareholders two or three accredited practical experts who are to inspect and report upon the mine, so as to determine its real position and prospects. A private letter, dated Salt Lake City, Feb. 18, says:—

"I write to you all I hear from one of the most intelligent miners who has been at work in the Emma Mine, you would hardly believe me; yet I am compelled to believe him, especially so as he has been discharged from the mine because he was too anxious to know what was in the mine. They have over 100 men at work in the mine, they are opening the mine in depth and length extensively, they are making extensive explorations with the view of moving large quantities of ore during the summer and fall. This miner tells me he has been in every part of the works, he has carefully examined the work, and the ore in sight he estimates at over 100,000 tons. The rich ore comes from next to the granite. The ore is full 13 ft. wide, in the proportion 1 of "S" ore to 5 of "M" granite. The ore of ordinary ore, which would make the average \$200 per ton or more. The average of the ore for some months past in the proportion named is over \$250. One thing you can rely on, that the mine is not only being worked for an object but for a purpose. If Emma is not good there is not a mine in the United States that is. Let the facts, the actual, the real condition of the Emma, be officially and truly stated. I believe in 45 days after such information was posted the stock would sell freely at and above 100. The grand movement in Emma may not take place for some months—say June or July—but I tell you the winter snows place for some time will see the price up and booming. It may be, or seem a long time that has no turn, but I tell you the turn must come."

Another letter, dated Feb. 21, says:—

"The Emma is all right; the ore in the bottom holds good and strong. The mine never looked better, nor promised so largely. I am confident it is so."

Last Chance, ½ to 1½; there are three shifts of men running the tunnel, and have it drawn in about 50 ft. These shifts will make about 5 ft. per day, consequently it will be about 100 days working before it will reach the vein. Flagstaff, 2½ to 3; the shipments are about 40 tons per day, using two furnaces of the Last Chance, turning out about 1½ ton of bullion per day. Chicago, 7 to 7½; the report to be submitted to the forthcoming meeting states that for the nine months ending Dec. 31 the hired furnaces commenced work on June 9, 1873, and in a run of one month realised a profit of \$4977.35. Mr. Godbe then ceased working the hired furnaces, as he considered this short run would be sufficient to discharge his guarantee; and as the necessary improvements at the mine were then progressing, they prevented the shaft being used for the purpose of extraction of ore. The new furnaces were ready to run about the end of August, and smelting was commenced in one of them on Sept. 1. From reports received, the directors are of opinion that they are well constructed, and have a capacity for smelting more than 50 tons of ore per day, or more than twice the present average production of the mine. The profit realised by smelting during the four months ending Dec. 31 amounted to 7149.95, 3d., or about 1877.75, 4d. per month for that period. The United States Government patent was issued on April 21, 1873, for 1475 ft. of the 2000 ft. of the mine conveyed to the company by Mr. Godbe. The remainder—525 ft.—is held under the usual possessory title. A patent has been applied for on behalf of the company, and the time for opposition has passed. Utah, 1½ to 1½; Mr. Longmaid reports that the frost has hitherto prevented him from commencing regular dressing, but that as soon as the weather became more open he was prepared to push on with all speed.

Richmond, 5½ to 6; the weather at Eureka has not yet permitted of the resumption of smelting. In announcing the change of offices in London the board inform the shareholders that the intelligence from the mine is of the most satisfactory character. The *Eureka Sentinel* of Feb. 14 gives a detailed account of the present advanced state of the works in preparation for the renewal of smelting, and states that, "The vein being worked is over 200 ft. in width, and is increasing in size and richness, though being worked continuously for the distance of 800 ft. Every day furnishes more proofs of the value and permanency of the ledge, and from appearances it seems inexhaustible. As soon as the spring opens and the coal burners commence shipping coal in sufficient quantities all the furnaces will be worked. By the untiring energies of those having the affairs of the company on their hands, the Richmond is now the great mine of the base range. To them we are in a great measure indebted that the district occupies the position it does in mining circles; and yet the resources of this and other mines are but partially developed. During the coming summer it is confidently expected that the amount and quality of ore will be greater and better than ever." The *Times* of March 11 gives the details of the specie production of the States and Territories of the Pacific coast during the past year. The value in gold was \$5,540,000; silver, \$9,910,000; making a total of \$15,450,000. To this amount California contributed \$3,605,000; Nevada, \$7,050,000. "California has not produced so much by 200,000, but Nevada has given an increase of 2,000,000." To this vast increase the Eureka district has largely contributed, the Richmond alone having produced 600,000 ozs. of silver, 32,000 ozs. of gold, in addition to 5000 tons of lead.

Eberhardt shares have improved to 3½ to 4½ upon the information which appeared last week. New Pacific, ½ to ½; in another column we publish a letter from the superintendent, by which it appears that he had cut a leader of rich ore and was expecting further discoveries as the development progressed.

The shares of the different gold washing companies still command a good deal of attention, and Birdseye shares especially have been in request during the week, and close firmer and in demand. Sweetland Creek shares have also been well enquired for, and leave off at an advance on last weeks' prices. The new issue of shares in Malpas has been well applied for. Malpas, ½ to 1½; the whole of the 10,000 preference shares offered for subscription a week ago in this company have been applied for. Rica, ½ to ½; Tolima, 3 to 4; Western Andes, 3½ to 4½; Malabar, ½ to ½. Blue Tent, 5 to 5½; the clean up has been delayed through an accident caused by a severe storm, which had damaged the woodwork supporting some iron water-pipes. In other respects the work was going on as well as could be desired. Birdseye Creek, 3½ to 3½; a telegram from the agent this week announces another clean up, leaving a profit of 16000. \$8000 for the month of February. Cedar Creek, 2 to 2½; at date of last advices the agent reports that the washing had been somewhat delayed by the heavy storm. The tunnel was in good course of driving by the new rock drill. Sweetland Creek, 4½ to 5½; Mr. McLean reports everything progressing satisfactorily. The late clean up was principally from the side drift.

Cape Copper, 2½ to 3; a dividend of 20s. per share, free of income tax, has been declared; 480 tons of ore and 14 tons of regulus were sold by public ticketing on Thursday, at an average of 15s. 5d. per unit, realising approximately—ore, 11,6000; regulus, 5000. New Zealand Kapanga, 5 to 5½; we publish this week the monthly report from this mine. Notwithstanding the heavy nature of the work, the agent appears to be making rapid progress towards completing

the erection of the engine, and expected to resume the sinking of the main shaft by the middle of last month.

Van, 2½ to 3½; in another column we publish the usual monthly report from the mine; it is not so full as usual, owing to the nearness of the general meeting, which we understand, is to be held this month, when the agent will enter very fully into the particulars of the present position of the mine. The driving of the cross-cut through the lode at the 75 fm. level was being pushed on; the last 6 ft. had laid open several rich ribs of solid steel ore. The usual four-weekly sale on Thursday of 450 tons lead and 100 tons blende realised 6358.15s. Van Consols shares are undoubtedly the exception to the general rule at this time, having advanced to 4½ to 5, strong buyers. A splendid lode of lead has been met with in the 15 fm. level under adit, the very same level at which the neighbouring mine—the Van—commenced its prosperous career. Bog, ½ to ½; the lode in the engine-shaft is improving, and augurs well for the next level when reached; some other parts of the mine are also looking better. Pennerley, 1½ to 1½; it will be seen from the report in another column that, upon the whole, the mine presents an improved appearance this week. Perkins Beach, ½ to ½; an improvement has taken place in one or two places, and the agent holds out hopes of a discovery before long.

Subjoined are the closing quotations:—  
Bog, ½ to ½; Carn Brea, 23 to 25; Devon Great Consols, 1¼ to 1¼; East Van, 1¼ to 1¼; East Lovell, 10½ to 11; Great Wheel Vor, ¼ to ¼; Great Laxey, 11 to 12; Hingston Down, ¼ to ¼; Pennerley, 1¼ to 1¼; Perkins Beach, ¼ to ¼; Tin-croft, 2½ to 2½; Tankerville, 8 to 9; Van, 2½ to 3½; Van Consols, 4½ to 5; West Cliverton, 4½ to 5; West Tankerville, 1½ to 2; Alameda, ½ to ½; Birdseye, 3½ to 3½; Cedar Creek, 2 to 2½; Cape Copper, 2½ to 3; Colorado Terrible, 3½ to 4; Chontales, ¼ to 1; Don Pedro, 3½ to 4; Eberhardt and Aurora, 3½ to 4½; Emma, 2 to 2½; Flagstaff, 2½ to 3; Last Chance, ½ to 1½; Malabar, ½ to ¾; New Quebrada, 3½ to 3½; New Pacific, ½ to ½; Richmond, 5½ to 6; Sweetland Creek, 4½ to 5½; St. John del Rey, 190 to 200; Don Pedro, 1 to 1½; Sierra Buttes, 2 to 2½; Teocoma, ¼ to 1; Utah, 1½ to 1½; Dolcoath, 33 to 35; West Esgrail Lie, 2½ to 2½; Blue Tent, 5 to 5½; Holcombe Valley, ¼ to 1.

COLLIERIES.—A fair amount of business has been transacted during the week, and quotations have been well maintained, closing in some cases higher. The following have been in most request:—Welsh Freehold Coal, Chapel House, United Bituminous, Darlington Iron, Cardiff and Swansea United Bituminous, New Sharlston, Newport Abercarn, Ebbw Vale, Pelsall, Silkstone and Dodworth, Silkstone Fall, West Mostyn, and a few others. The meeting of the Wellington Coal and Iron Company is called for the 19th inst., when a dividend at the rate of 12½ per cent., carrying forward 1612½, will be recommended by the directors. For the half-year ending Jan. 24 the books show a net earning of 7352½, equal to 15 per cent. on the whole paid-up capital. This result in the face of a partial reconstruction of the company is very satisfactory. The remainder of the share capital—5978 shares of 10s. each—will now be offered preferentially to the shareholders. At the Imperial Brazilian Collieries Company meeting on Wednesday the special resolutions passed at a previous meeting were confirmed. Cardiff and Swansea Colliery shares are somewhat lower, consequent upon the decline in the price of coal, and they have been selling at about 8s. to 10s. discount. Newport Abercarn are also depressed, a call of 12 being payable at the commencement of next month. West Mostyn shares have been in demand at ½ to ½ prem. It is reported that the company is about to purchase a going colliery on very advantageous terms. United Bituminous, 1½ to 1½. House coals are dearer through the sudden inclemency of the weather, and rates in Thames-street have advanced 2s. and 3s. per ton. Welsh Freehold, 4½ to 5½, and in demand. The output, we understand, is increasing weekly. New Sharlston, 11 to 13; Bowling Iron, 75 to 80. Chatterley Iron, 45 to 50; the reports just issued show that the balance of net profits is sufficient, after payment of the preference dividends, to admit of a dividend of 12½ per cent. on ordinary shares, carrying upwards of 20,0000 forward. Bolckow Vaughan, 29 to 31; the annual meeting will be held on the 24th inst. The directors in their report recommend dividends which will make 7½ 11s. 8d. on the A shares for the year, and 6½ 10s. on the B shares. After placing 130,0000 to reserve fund a balance of undivided profits amounting to 8108½ is carried forward. The Scotch colliery owners are now endeavouring to induce their men to accept a reduction in their wages of 2s. per day. Acting on the advice of Mr. McDonald, the men have signified their willingness to accept a fall of 1s. Negotiations are still pending. Darlington, 10 to 11; the ordinary general meeting was held, on Monday, at the offices in Darlington. The directors' report, with balance-sheet, showed a profit of 80,688. 0s. 6d., which was disposed of as follows: 43,7500 was employed in paying a dividend of 2½ 10s. per share, free of income tax, 11,918½ 0s. 6d. was carried forward, and the very handsome sum of 25,0000 formed the commencement of a reserve fund. Alone, nearly of the whole northern companies, the Darlington is well supplied with rail orders, and an improved business during the spring is anticipated. After transacting the ordinary business the meeting was made extraordinary to make three alterations in the Articles of Association. The Glaisdale Whinstone Quarry during the week has met with a large share of attention, and it is understood that sufficient support has been received to more than justify the sanguine expectations of the directors. The allotment will shortly take place.

At Swansea Ticketing, on Tuesday, 1000 tons of copper ore were sold, realising 15,046. 7s. 6d. The particulars of the sale were—Average standard for 9 per cent. produce, 95.12s.; average produce, 20½; average price per ton, 16½; quantity of fine copper, 202 tons 10 cwt. The following are the particulars:—  
Date. Tons. Standard. Produce. Per ton. Per unit. Ore copper.  
Feb. 10 1273 95 12 0 20½ 15 0 0 14 10 0 213 15 0  
March 10 1000 95 12 0 20½ 15 0 0 14 10 0 74 3 4  
Compared with the last sale, the decline has been in the standard 10s., and in the price per ton of ore about 2s. On March 31 there will be offered for sale 1211 tons of ore, from the Cape, Berehaven, Ballycunnisk, Concordia, Stanley, and other mines.

Mr. G. S. Herbert and Son are inviting subscriptions at par for 350 SIX PER CENT. PREFERENCE SHARES OF 1000 each, being part of the 3750 preference shares constituting the entire preference capital of the CORNWALL MINERALS RAILWAY COMPANY. The security is ample, the estimated net earnings available for the interest of 22,5000 on the preference capital being 67,8750, or three times the amount required. The net price, reckoning the accrued interest allowed and the discount for pre payment of instalments, is 97½ 15s. per share. The company's system of railways, which is about 52 miles in extent, is of a very important character to West Cornwall, affording most valuable business facilities to the extensive series of mining properties in the district, as by it they are placed in direct railway communication with the port of Newquay on the north, and the ports of Par and Fowey on the south, from which places extensive shipments of ore, both coarse and the foreign trade, are made. The company also possesses special privileges in respect to the shipments from Fowey Harbour, which is accessible to vessels of 1000 tons burthen at all times of the tide, and which will be improved, and by the addition of extensive wharves, sidings, and other works, adapted to the shipment of at least 2500 tons of material per day estimated to pass over the railway. The company, in addition, leases Newquay Harbour and Par Harbour, thus concentrating in itself all the necessary arrangements for the movement of ores either by water or by railway. The gross amount of earnings, including that from the harbours, is estimated at 169,2500 per annum; and, deducting working expenses and rent, the net earnings of the undertaking are estimated at 81,6250 per annum. The works have been actively proceeding with over the whole system, and it is confidently expected that all the lines will be open for mineral traffic during next month. The present market quotation of similar stock, taking a dozen different lines, varies from 27 to 41 per cent. premium, the average being rather over 34 per cent. The great prosperity of all railways having their principal traffic from minerals is well known, and the Cornwall Minerals Railway is not likely to form an exception. The prospectus will be found elsewhere.

The Debenture Bonds of the Honduras Railway Company are par to ½ prem. The Sterling Debentures of the Levis (Quebec) and Kinnebec Railway Company are ½ to 1½ prem. The Shares of Whitley Partners (Limited) are ¼ to ¾ prem. The Preference Shares of the Wayne's Northern Steam Coal and Iron works are ½ to 1 prem. The Erie Second Consolidated Seven per Cent. Loan is understood to have been a great success, and the price to night is 1½ to 2½ prem.

**BARYTES (SULPHATE OF), CRUDE OR GROUND, FOR SALE.**  
Apply to FORCE CRAG LEAD AND BARYTES MINING COMPANY, 69, Close, Newcastle-on-Tyne.

**LEAD MINES IN PORTUGAL.—WORKING OF THREE LEAD MINES.**

In the No. 37 Diario do Governo, Official Journal of the Portuguese Government, 18th February, were published the CONDITIONS for LICENTIATION for WORKING OF THREE LEAD MINES in MERTOLA, PORTUGAL.

## ORES, &amp;c.

I BUY at the highest prices:—  
LEAD ORES.—LEAD SILVER ORES.—SILVER-LEAD ORES.  
SILVER-LEAD.—HARD LEAD.—ANTIMONIAL LEAD.  
GOLD AND SILVER ORES.  
ZINC AND LEAD ORES MIXED TOGETHER.

Particulars by letter.

ARMAND FALLIZE, Ingénieur, à Liège (Belgium)

## CAPPER PASS AND SON, BRISTOL,

ARE PURCHASERS OF  
ANTIMONIAL LEAD, HARD LEAD, LEAD MATTE, LEAD SLAGS, SULPHATE OF LEAD, LEAD ASHES, COPPER SLAGS, COPPER REGULUS, TIN ASHES, ZINC ASHES, SPELTER DROSS, HARD SPELTER and MIXED METALS, DROSS or REFUSE containing COPPER, LEAD TIN, or ANTIMONY.

Mr. JOHN HENRY POOLE,

MINERAL AGENT,  
LIMPIAS, PROV. SANTANDER, SPAIN.

FOR AMERICAN COMPANIES.

MR. F. CAZIN, MINING AND CIVIL ENGINEER,  
Constructor of the Mineral Dressing Works at Rosa Clara, Hardin Co., Ills., and at Frumet, Mo.,

PATENTEE OF CAZIN'S CONTINUOUS ORE-PLUNGER JIG (ORE SEPARATOR)

MANUFACTURER OF ORE-SEPARATING MACHINERY.  
Makes Plans and Contracts for Ore Concentration and Smelting Works, guaranteed to work certain quantities at less primitive and running expenses, with better proportionate yield, than any offered on the North American Continent.

GENERAL AGENCY FOR THE SALE OF AMERICAN FLUOR-SPAR.  
Expertising, Surveying, and Reporting concerning Mines and Mineral Lands (Compare this Journal, Nos. 1932 and 1945.)

Direct letters to—

GOLCONDA, POPE CO., ILL., UNITED STATES, AMERICA.

HARDEN AND SON,  
MINING ENGINEERS AND GEOLOGISTS,  
430, WALNUT STREET, PHILADELPHIA, U.S.A.

## THE CAPE COPPER MINING COMPANY (LIMITED).

Notice is hereby given, that at a MEETING of the directors of this company, held to-day, it was resolved:—

"That a DIVIDEND of TWENTY SHILLINGS PER SHARE, free of income tax, be now declared, payable on the 25th day of March instant; and that the Transfer Books be closed from the 18th to the 25th March, both days inclusive."

By order of the Board, J. C. LEVYER, Secretary.

6, Queen-street-place, Upper Thames-street, London, 11th March, 1874.

## THE RICHMOND CONSOLIDATED MINING COMPANY (LIMITED).

The directors of the Richmond Consolidated Mining Company (Limited) hereby give notice that, on and after WEDNESDAY, the 25th instant, the OFFICES of the COMPANY will be REMOVED to 44, COLEMAN STREET, E.C.

By Order, THOMAS WESTBURY HALL, Secretary.

Offices: 61, Moorgate-street, London, E.C., March 12, 1874.

## THE MAMMOTH COPPEROPOLIS OF UTAH (LIMITED).

HOLDERS of SHARE WARRANTS in the above company are hereby REQUESTED to SEND THEIR ADDRESS to the SECRETARY, in order that they may have the option of sharing with the registered shareholders the advantages offered in the proposed issue of debentures, bearing interest at 20 per cent. per annum.

By order, CHAS. WM. COOK, Secretary.

25, Moorgate-street, E.C., 14th March, 1874.

MR. R. PERCY ROBERTS,  
FINANCIAL AGENT,  
60, ENGLISH STREET, CARLISLE.

MESSRS. CAMERON AND CO., FINANCIAL AGENTS  
AND SHARE BROKERS,  
BRIDGE STREET CHAMBERS, CHESTER.

LEAD ORES.				
Date.	Mines.	Tons.	Price per ton.	Purchasers.
March 2	Lisburne—Glogfack	15	£18 3 0	Sheldon, Bush, and Co.
	—East Darren	60	17 6 0	ditto
	—Cwmystwith	10	13 2 6	Burry Port Company.
	—South Darren	18	12 10 0	Treffer's Estate.
	—Frank Mills	33	14 6 0	Burry Port Company.
	—ditto	13	10 15 6	Nevill, Druce, and Co.
	—ditto	6	5 12 6	ditto
12	Plynlimmon	20	13 0 0	ditto
	—ditto	20	13 0 0	Walker, Parker, and Co.
	—West Tankerville	25	14 0 0	Runcorn Smelting Co.
	—Talargoch	25	13 11 6	Adam Eytton.
	—ditto	50	14 11 6	ditto
	—Prince Patrick	40	14 7 6	Walker, Parker, and Co.
	—North Hendre	38	14 6 0	ditto
	—ditto	2	16 10 0	Adam Eytton.
	—Wagstaff	23	12 11 6	ditto
	—Halkyn Deep Level	10	13 2 0	Walker, Parker, and Co.
	—Gorsedd & Celyn	8	13 13 6	Adam Eytton.
	—Queen	5	13 18 6	ditto
	—Van	800	13 18 6	Walker, Parker, and Co.
	—ditto	50	14 6 6	Adam Eytton.
	—ditto	100	14 13 0	ditto
13	Tankerville	75	14 0 0	Nevill, Druce, and Co.

DYLIFFE MINE sold 80 tons of lead ore on March 11, realising £1022.

BLENDE.				
Date.	Mines.	Tons.	Price per ton.	Purchasers.
March 11	Talargoch	150	£3 10 6	Kenrick and Son.
12	Van	100	2 0 0	Dilwyn and Co.

BLACK TIN.				
Date.	Mines.	Tons c. q. lb.	Price p. ton.	Amount. Purchasers.
Feb. 28	Pedra-an-drea	9 16 2 0	£255 0 0	£640 7 6—Carvedras.
March 7	Wheal Kitty	5 16 1 25	53 15 0	313 0 5—Calenick.
	—Wt. Godolphin	8 16 0 2	52 0 0	457 13 0—Bolthio.
11	Penhalls	6 17 0 13	53 15 0	369 10 0—Daubuz.

COPPER ORES.				
Date.	Mines.	Tons c. q. lb.	Price p. ton.	Amount. Purchasers.
March 5	West Godolphin	7 1 2 0	£7 8 6	£52 10 0—Nevill & Co.
	—ditto	2 3 1 0	17 16 6	38 6 0—Sweetland.

## COPPER ORES.

Sampled February 18, and sold at Swansea March 10.

Mines.	Tons.	Produce.	Price.	Mines.	Tons.	Produce.	Price.
Cape Ore	64	28½	£ 21 9 0	Cape Reg.	1	64¾	£242 1 6
ditto	28	21 8 6	ditto	23	47¾	36	19 6
ditto	61	28	21 5 6	Cape Ore	17	36	27 8 6
ditto	61	28	21 7 0	Berehaven	142	8	5 4 0
ditto	61	28	21 6 0	ditto	85	7¾	5 1 0
ditto	35	32¾	25 3 6	ditto	85	7¾	4 14 0
ditto	27	34½	26 7 0	Fursdon	54	3¾	1 17 0
ditto	30	33½	25 11 6	ditto	13	8	5 6 0
ditto	34	33½	25 11 6	Bampfylde	60	9¾	6 10 0
ditto	33	30¾	23 10 6	Cop. Refuse	37	6¾	1 16 0
ditto	25	51¾	39 4 0				
TOTAL PRODUCE.							
Cape	583	£12,914	8 6	Bampfylde	50	£ 526	0 0
Berehaven	313	1,872	4 0	Copper Refuse.	37	66	12 0
Fursdon	65	165	3 0				

## TOTAL PRODUCE.

Cape	533	£12,914 8 6	Bampfylde	50	£ 828 0 0
Berehaven	313	1,572 4 0	Copper Refuse	37	66 12 0
Fursdon	67	163 3 0			

COMPANIES BY WHOM THE ORES WERE PURCHASED.

Names.	Tons.	Amount.
Copper Miners' Company	75	£ 2,232 11 0
P. Grenfell and Sons	49	1,253 3 6
Nevill, Druce, and Co.	76	1,342 14 6
Vivian and Sons	430	2,065 7 0
Mason and Elkington	61	1,302 7 0
Charles Lambert	247	5,287 13 0
Sweetland, Tuttle, and Co.	62	1,592 11 6
Total	1000	£15,046 7 6

Copper ores for sale March 31:—Cape (about) 700—Berehaven 255—Copper Ore 155—Ballycunnisk 47—Concordia 34—Stanley Copper Mine 20.—Total, 1211 tons.

## TOTALS AND AVERAGES.

Whole sale	21 cwt.	Produce.	Price.	Per unit.	Standard.
1000	20½	£15 0 0	14s. 10d.	£ 95 12 0	

## COPPER ORES.

Copper ores for sale, at the Royal Hotel, Truro, on March 19:—Devon Great Consols 551—South Caradon 406—Hockwood 302—Marke Valley 254—Hingston Down 250—Glasgow Caradon 260—Wheal Crebor 160—East Caradon 145—Prince of Wales 140—Wheal Russell 95—Bedford United 94—Gawton Copper Mine 90—Gunnis Lake (Clitters) 83—West Maria and Fortescue 60—West Caradon 50—Ambrose Lake 8

Total, 3248 tons.



## TO ARTESIAN WELL SINKERS, AND OTHERS.

**THE LEAMINGTON LOCAL BOARD OF HEALTH** are prepared to RECEIVE TENDERS for the WORKS required to be done in SINKING a SHUNT and BORING for WATER.

Plan and specification can be seen on application to the Borough Surveyor, Town Hall, Leamington, and any further information obtained on application to Mr. THOMAS DALE, C.E., Hull Waterworks, and Consulting Engineer to the above Board.

Sealed tenders, endorsed "Tender for Well and Boring," and enclosed under cover, addressed to the Chairman of the Waterworks Committee, Town Hall, Leamington, to be sent in on or before Monday, the 23rd instant.

The lowest or any tender not necessarily accepted.

Town Hall, Leamington, March 5, 1874.

## Notices to Correspondents.

\* Much inconvenience having arisen in consequence of several of the Numbers during the past year being out of print, we recommend that the Journal should be filed on receipt; it then forms an accumulating useful work of reference.

**EAST POLBURN TUN MINING COMPANY (Limited).**—Can any reader give me some information respecting this company? It is said to have collapsed, although 25,000l. was called up. Not a scrap of information has been furnished the shareholders from the first.—H. B.: *Nottingham*.

**NEW PROCESS FOR EXTRACTING METALS.**—Can any of your readers oblige me with a few particulars of the new process for extracting metals from their ores spoken of by Mr. T. J. Barnard, as I can trace no patent in the office under his name as patentee?—X. B. Z.

**SCALE FOR ADVERTISEMENTS.**—Our charge for general advertisements is—for six lines and under, 4s.; per line afterwards, 8d. Average, 12 words per line.

**AMERICAN SUBSCRIBERS.**—In reply to several enquiries, it may be stated that subscribers in the United States can be supplied with the *Mining Journal*, post free, at the price of \$8 gold per annum, payable in advance, by remitting to Mr. D. Van Nostrand, publisher, and importer of scientific books, &c., Murray-street, New York; or, direct to our Office, 26, Fleet-street, E.C.

\* \* The Title-PAGE and INDEX to VOLUME XLIII., for the year 1873, was published in the Supplement to the Journal of Jan. 24.

## THE MINING JOURNAL,

### Railway and Commercial Gazette.

LONDON, MARCH 14, 1874.

## THE NEW QUEBRADA COMPANY.

The ordinary general meeting of this company (reported in our columns last week) was characterised by the usual dissatisfaction and disaffection of the shareholders, arising principally from a fresh grievance—the constitution of their board.

When the Quebrada and Bolivar Companies were settling the contract for the construction of the Bolivar Railway, the Quebrada directors acquiesced in an arrangement with Messrs. MATHESON and Co., the promoters of that scheme, that two of the Bolivar directors should have seats on the Quebrada board, and *vice versa*, thus having four with a duplicate interest on each board of six directors. This arrangement, without reservation, was injudiciously embodied in the contract, making it appear that the Bolivar Company had, as a right, the appointment of two of their directors on the Quebrada board. This, however, was *ultra vires* as between the directors who signed the contract and the shareholders of the Quebrada Company, the 78th Article of Association providing that "any casual vacancy occurring among the directors shall be filled up as early as practicable by the board of directors, subject to the approval of the members at the next succeeding ordinary general meeting." The Quebrada directors could, and did, only bind themselves so far as the extent of their powers, regulated by the Articles of Association, and consequently the clause in the contract is rendered legally invalid, and is reduced to merely an undertaking on their part to recommend to the shareholders the above arrangement, which we purpose hereafter to demonstrate has been, and will be, adverse to the prosperity of the company. They thus placed themselves in this dilemma, either to retain the Bolivar directors on the Quebrada board to the detriment of the company, and so fulfil, as it were, their moral obligation, or to promote and assist in their ejection, and thus act solely and entirely in the interest of the company, for which purpose only the Quebrada shareholders entrusted them with the administration of their affairs. The shareholders certainly are in no way under any obligation to countenance the illegal and erroneous acts of their directors.

When the above arrangement was being made the Quebrada Company was in a state of prostration. For years it had been endeavouring to obtain a railway, knowing full well that that was the only lucrative means of transporting its ore, and thus getting a return on its capital. Through discussions and differences of opinion the directors had several times failed in their endeavours, until at last they induced the influential firm of Messrs. MATHESON and Co. to entertain the scheme for the construction of a railway. They, wearied and sickened by the frustration of their former efforts, and still assailed by a section of dissatisfied shareholders, in over anxiety lest their project should again prove abortive, raised no objection to what appeared to them a question of minor consideration—the interchange of directors on the two boards, overlooking that their interest on many points would not be identical, that questions would arise requiring a decision adverse to the one or the other company, and consequently it would be expedient and right in the interest of each company that they should be discussed and decided by the separate and independent consideration of each board.

As an illustration of our remarks, Colonel STRANGE, the Chairman of the Quebrada board, also having a seat on the Bolivar directorate, towards the end of last year obtained two concessions from the Venezuelan Government, and offered them to the Quebrada Company for nothing, conditionally that it should work and carry out the undertakings. It was, however, advised by counsel that the Memorandum of Association, which cannot at any time be legally amended or altered in the slightest degree, altogether precluded their acceptance. Whereupon the Quebrada board, consisting of three Bolivar and two Quebrada directors proper (Colonel STRANGE being absent) recommended, whether unanimously we know not, that they should be offered on like terms to the Bolivar Company, so that there arose this anomalous state of affairs—that three Bolivar directors, in virtue of their having seats on the Quebrada board, and being in a majority and thus ruling the meeting, recommended the gift to themselves, as Bolivar directors proper, of two valuable concessions. The Quebrada Company had not and could not have at any time any interest whatsoever in them in consequence of the unalterable wording of its Memorandum of Association. No gain could accrue to the Quebrada by the Bolivar Company carrying out the concessions, and the dispute was solely and entirely one between the Bolivar Company and Colonel STRANGE. This recommendation, therefore, was a great irregularity in excess of the duty of the directors, who had entrusted to them by the Quebrada shareholders only the administration of the affairs of the Quebrada and not the Bolivar Company. It was, however, for a reason we need not at present discuss, by the advice of the Quebrada solicitor thought prudent at the ordinary general meeting to expunge this recommendation from the directors' report.

Colonel STRANGE considered he was under no obligation to the Bolivar Company to make a present of the concessions, and required payment. The latter then claimed as a right one of them, and in consequence of a threat of legal proceedings, and Messrs. MATHESON and Co., who are to a vast extent interested in the Bolivar Railway, declining to purchase or arbitrate, Col. STRANGE disposed of both concessions elsewhere, whereupon the Bolivar board had a Bill in Chancery prepared, and wrote to the Quebrada Company, inviting them to become co-plaintiffs, on the consideration of which at the Quebrada board, consisting of the majority of the three Bolivar and two Quebrada directors proper (Col. STRANGE being requested by his colleagues to temporarily vacate his seat), this course of action

was decided upon, embodied in the following minutes of the board book, which were read at the late meeting of shareholders:—

"A letter was read from Messrs. Bischoff and Bompas, stating that the counsel of the Bolivar Company advised that the Quebrada Company should be made co-plaintiffs with the Bolivar Company on the filing of a Bill in Chancery against Col. Strange with reference to the concessions granted to him by the Venezuelan Government.—The Chairman read correspondence between himself and Mr. H. M. Matheson in reference to the concessions, and stated he had no difficulty in disposing of the concessions on advantageous terms.—It was then suggested by Mr. Thompson that the subject should be discussed in the absence of Col. Strange, whereupon that gentleman left the chair, which was taken by the deputy Chairman, Mr. Leary.—At the request of the board, Messrs. Bischoff and Bompas were sent for, and attended with the draft bill, to which the consent of the board was required.—Whilst it was being read and considered Col. Strange re-entered the room, and resumed the chair, insisting on his right to do so in the interest of the shareholders, whereupon it was moved by Mr. Leary, seconded by Mr. Thompson, and unanimously resolved, that in the opinion of the board it would not be seemly or proper to pursue the consideration of the question in Col. Strange's presence.—Thereupon the Chairman again vacated the chair, first desiring his protest should be entered against the consideration of the subject in the absence of the company's solicitors, Messrs. Eyre and Co.—The consideration of the bill was then resumed, and ultimately it was resolved that Messrs. Bischoff and Bompas be instructed to request Mr. Davey, independently, to advise the Quebrada Company whether they ought to join in this Bill; and that subject, to his opinion, being in the affirmative, the board consented that this company join with that of the Bolivar Company in the filing of the Bill, and that Messrs. Bischoff and Bompas be instructed to act for them in so doing, subject to their first receiving from the Bolivar Company an undertaking to hold this company free from liability to costs in connection with the suit."

We admit it was "not seemly and proper to pursue the consideration of the question in Col. STRANGE's presence," on account of his duplicate interest; but we fail to see how it was not so in the presence of the three Bolivar directors, who not only had such an interest, but had considered the question, and formed an opinion, as members of the Bolivar board, that the Quebrada directors, including themselves, should, if possible, be induced to become co-plaintiffs. Mr. THOMPSON, one of the two Quebrada directors proper, commenting on the above views, previously expressed by a shareholder, observed "he thought there was some force in the suggestion that the two Bolivar delegates should have left the room with Col. STRANGE; the justice of such a course had not struck him at the time." We respect his candour and courage in acknowledging his error, but observe he mentions only two Bolivar directors, whom he properly designates as delegates. We, however, consider that all three should have vacated their seats, since they conjointly might, and did, discuss the question prejudicial in favour of the Bolivar interest. No doubt Mr. THOMPSON in future will exercise the same courage, and, when points arise affecting the two companies, will require the absence of the Bolivar delegates. If he, seeing the justice of such a course, had succeeded temporarily in removing the Bolivar directors, in consequence of their duplicate interest, the consideration of the question would have been left to the two Quebrada directors proper, a number insufficient to form a quorum, and consequently the business of the company would have come to a dead lock.

Mr. HEMMING, who was elected at the meeting of the company to a seat on the Quebrada board, gave as his opinion that the Bolivar influence should be reduced; that there should be "not two members from each company upon the other's board, making four, and giving the preponderating influence of two-thirds over one-third, but that there should be two gentlemen who should be directors upon the two companies, thus having four independent members upon the Quebrada and four independent members upon the Bolivar board, if they so desire and wish;" and remarked that, in consequence of having only two independent members, "we have recently escaped from a serious collision;" and further stated, "it would be very hard to find that we were swamped by a more powerful introduction into our company." Thus Mr. HEMMING has, as it were, pledged himself to use his best endeavours to reduce the Bolivar influence; and no doubt he will join with Mr. THOMPSON, if not in exerting himself for its total removal when points are raised affecting the two companies, at any rate for its mitigation. When intricate questions arise between the two companies, it would be advantageous that they should be discussed by more than three, the present number of independent directors, Col. STRANGE having announced his intention to resign, and for this reason we would suggest that the board be increased to the full complement of nine.

In the minutes of the board we observe that Messrs. BISCHOFF and BOMPAS, the solicitors of the Bolivar Company, "were sent for, and attended with the draft bill"—the Bolivar Company v. Colonel STRANGE. There could be no objection to those gentlemen giving an explanation of its contents, but we consider that it would have been natural, and prudent, to have called in the assistance of Mr. EYRE, the Quebrada solicitor, and we approve of the conduct of Colonel STRANGE, in fulfilment of his duty to the shareholders, in protesting that the subject ought not to be considered in the absence of the company's solicitor. On a former occasion, when in the absence of Colonel STRANGE it was under consideration whether the Quebrada Company could accept one of the two—the steamer concession—the legal advice of Messrs. BISCHOFF and BOMPAS, not of Mr. EYRE, was taken by the Quebrada board. The minutes relate that on the consideration of the Bill "ultimately it was resolved that Messrs. BISCHOFF and BOMPAS be instructed to request Mr. DAVEY independently to advise the Quebrada Company whether they ought to join in the Bill." A shareholder (a solicitor) at the late meeting enquired who was to pay for Mr. DAVEY's advice; and, on being informed the Bolivar Company, he aptly remarked he failed to see how it could be called an independent opinion. We learn from the minutes that if Mr. DAVEY had advised that the Quebrada Company ought to join in this Bill, Messrs. BISCHOFF and BOMPAS, with great impropriety, were instructed to act as solicitors to the Quebrada Company. We draw your attention to the above facts in illustration of our opinion that the Quebrada Company, to its great injury, and in the language of Mr. HEMMING, is swamped by the Bolivar influence.

As further illustration of our remarks, a question involving a difference of opinion has arisen between the Quebrada and Bolivar boards as to the ultimate or proportionate payment of 5000l., the cost of a concession from the Venezuelan Government, referred to in the late report of the Quebrada directors to the shareholders, and particularly entered into by Mr. LEARY, in his speech at the meeting of the company, reported in our columns of Saturday last, whereby it appears that in consequence of such difference of opinion having arisen, previous to the treaty for the concession, a resolution was carried at both boards that all questions between the two companies should be temporarily waived, that the concession should be applied for, both companies conjointly determining the price to be paid, and that afterwards the amount, or proportionate amount, should be paid on the basis of the advantage to each, and if any difference or question arose arbitration should ensue. Inasmuch as we perceive a difference of opinion has arisen between the two boards, involving a considerable payment, we think the discussion of a question of this description could not be entered into with satisfaction to the Quebrada shareholders, except by those directors alone who have a single interest in the company, and we fail to understand why the Quebrada board advanced the 5000l., unless overruled by the Bolivar influence, as long as the payment thereof was an open question between the two boards. It would have been fair and equitable that it should have been so advanced in equal shares pending the decision of points of difference.

We have now illustrated the impropriety, and danger to the Quebrada shareholders, of the intermixture of the two boards, and, although we trust that no great injury has as yet accrued, it is impossible that such an administration of their affairs can continue without disunion, internal dissensions, and loss. Many most important questions, other than those we have mentioned, will arise, such as the supply of ore to the Bolivar Railway Company and the purchase of the railway by the Quebrada Company, in accordance with the contract, which will require the serious consideration of the Quebrada board proper, apart from its Bolivar section, whose interests are not, or will not be, identical, but opposing, and we are at a loss to understand, and it is an anomaly, how gentlemen can first sit upon one company's board and vote in favour of the interest of that company, and then take their places on the board of the other and record their votes in its favour, on conflicting questions between the two companies—both of whose interest by accepting a seat on their boards they are bound faithfully to defend and promote. Quebrada shareholders, no doubt, will not quietly submit to this unreasonable and incongruous state of affairs—Bolivar directors endeavoring

to drag the Quebrada Company into a Chancery suit, in which it has not and cannot have any interest, employing the Bolivar solicitor to engage Bolivar counsel to give a Bolivar opinion, wrongly designating it an independent opinion. Moreover, there is one and the same secretary, in London, and agent, at Tucacas, for both companies. It is undoubtedly to the advantage and benefit of both companies that they should work in harmony, but we do not see how this can be possible unless there is a distinct and separate directorate.

## COAL IN NOVA SCOTIA.

The production of Pictou (Nova Scotian) coal in 1873 exhibited no progress as compared with 1872; but, on the contrary, it presented a decrease of some 60,000 tons. A disastrous accident at the Intercolonial Mines, in May, resulting in lamentable loss of life and serious destruction of property, prevented that company from meeting the large demands upon its production, and some pressure was put upon other local undertakings to make good this unfortunate state of affairs; but the ground lost through the calamity in question could not be wholly recovered. Of the Pictou coal raised last year 52,203 tons were exported to the United States. The Intercolonial Company, it may be observed, has resumed operations, and it is now in a position to meet orders on the opening of the navigations this spring. A fifth company, known as the Vale Coal and Iron Company, will also be in operation in the spring, so that if the demand for Pictou coal is well sustained a large increase in the production can be readily secured. From 1828 to 1858 the General Mining Association enjoyed a monopoly of all the minerals in Nova Scotia; but on the surrender of the monopoly of this undertaking in 1858 other companies were organised, so that at present there are five collieries at Pictou in full working order, and capable of producing, without very material additional outlay, 1,000,000 tons of coal annually. Until 1864 Pictou coal found a market almost entirely in the United States, but it has not of late been in quite so much request among the Americans, as it has become somewhat too dear. In the meantime, however, a demand for Pictou coal has been gradually growing up in the Canadian markets, partly on manufacturing account, and partly, and more especially, for recently inaugurated Canadian ocean steamship lines. The price obtained for Pictou coal at the shipping port last year was \$3 to \$3½, with duty and freight added; and, with a prospective increase in the demand for Pictou coal at home and in the West Indian and other foreign markets, to say nothing of the comparatively high rates prevailing for coal in Great Britain, no material reduction in Pictou quotations can be anticipated. As regards Cape Breton coal, it was raised last year to the extent of 468,000 tons, of which 192,500 tons went to the United States, 241,500 tons to the British American Provinces, and 34,000 tons to the West Indies. Nearly the whole of the 192,500 tons of Cape Breton coal which went last year to the United States were imported under contracts for the manufacture of gas, for which purpose it can be used economically in connection with the coal of Pennsylvania and West Virginia. The American markets were well stocked with gas coal at the close of 1873; there is, however, no reason to anticipate any material decline in the quantity of Nova Scotian gas coal required for the United States in 1874.

The principal Pictou coal mining companies are the Albion, the Acadia, the Nova Scotia, and the Intercolonial. The leading Cape Breton coal mines are the Sydney, the International, the New Glasgow and Cape Breton, the Lingan, the Caledonia, the Glace Bay, the Block House, and the Gowrie. In addition to the companies and mines just mentioned there are several smaller ones, the operations of which have presented only a local interest. The Spring Hill Mining Company in Nova Scotia commenced operations last summer. This undertaking has facilities for reaching tide water in the Bay of Fundy, and short water transportation to the New England and New York markets. There are at present 600 gas companies in the United States, and the consumption of suitable gas coal is consequently increasing, so that the extraction of the Cape Breton companies will not improbably become still larger. The American gas companies on the Atlantic seaboard consume, it is estimated, about 2,000,000 tons of coal, with an annual increase of 10 per cent. The resources of the United States in regard to the production of American gas coal are very large; still the value of Cape Breton coal for gas purposes cannot also be overlooked. What Nova Scotia requires, in common with all the English colonies, is more capital and more labour. The coal resources of Nova Scotia are very large, but they are not turned to any very great account at present, simply from the absence of an adequate amount of capital and adequate supplies of labour. The accession of a new minister to the Colonial Office may, perhaps, prove of some advantage to the colonies. Lord CARNARVON is said to appreciate to the full extent the value of those magnificent dependencies, and to be disposed to encourage their development by extending towards them the largest possible measure of official aid. The extension of means of information with regard to British America, and the gradual accumulation of population in that important quarter of the world must, however, be the great means by which the utilisation of Canadian coal and of Canadian resources generally will be achieved. There can be no doubt that Nova Scotia and the Canadas will be much more thickly inhabited one day than they are at present, and when they are thus occupied a serious and thorough effort will, no doubt, be made to thoroughly develop their mineral wealth. We must not be too impatient, but must leave time to do its gradual but none the less beneficent work. Even now Nova Scotian coal has a tangible and recognised position upon the American and other markets, and plays a useful part in the industrial world. But Nova Scotia possesses so large a supply of coal that we must necessarily hear much more about it in future than we do at present.

## THE MINING BUREAU IN PARIS.

Since the announcement has been made by the French press that an Examining Bureau was organising in Paris, with the adhesion of the principal foreign consuls in that city, for the purpose of investigating all foreign enterprises, without distinction, previous to their being placed upon the French market, it has been found necessary to have a special agent at the "Mining Bureau of the Pacific Coast" attached to it, and who will act as correspondent with the London agent of that institution, which has of late been so strongly commended by the French Government. We learn with pleasure that M. JULES PATON, the well-known financial editor for the last thirty years of the *Journal des Debats*, the leading organ of the French press, has been by special appointment agent-correspondent of the Mining Bureau. The above paper, whose authority in political as well as in financial matters is universally established, concludes as follows in its number for March 6, in regard to the projected organisation of the Examining Bureau for foreign enterprises on the Paris market, as recommended by the *French Economist*:—"We fully associate ourselves with the conclusions of the *French Economist*, and we are much gratified to learn that it is seriously intended to organise an examining and intelligence Bureau, which is already certain of the co-operation of a consultation commission, of which several foreign consuls resident at Paris have promised to become members, in order to enlighten the directors of this new institution upon the *bona fide* and real character of enterprises originated in their respective countries. Several of the most influential economists and financiers of Paris have shown themselves well disposed to contribute with their experience and support to the success of an organisation which is to protect efficiently interests worthy of the greatest care."

In accordance with the wise conclusions of the *French Economist*, we should recall with that paper that the annual French savings bill, soon after the early liberation of the last loan, amount to 1500 millions of francs; and that, should an immense sum not be invested in French enterprises it would be soon attracted to, and probably lost in, spurious Eastern or American schemes. Let us, therefore, wish success to the new institution, of which we will speak again as soon as its organisation has been completed."

We find it unnecessary to add any comments to that coming from such a reliable source as the *Journal des Debats* and the *French Economist*. It is a well-known fact that the French investing public, being less acquainted than the English with the treatment of foreign enterprises, has been nearly in every instance disappointed whenever French capital has been embarked in them; and it is certain that, with such a protection association as recommended by the two above papers, modelled upon the Mining Bureau, but embracing all foreign schemes, such mystification as the great trans-continental "Murphy" railroad swindle, which cost, two years ago, nearly 25,000,000fr. to



our credulous neighbours, will never occur again. The *Mining Journal*, as well as our press and people on this side of the Channel, heartily welcome the new French institution, as well as its commendable object.

#### MINING IN CORNWALL.

We publish in this day's Journal reports of the meetings of two companies, which show that, notwithstanding all that is being said and written, legitimate mining enterprise in the county is neither dead nor dying. The Tretoil Company, if we remember right, was established in the early part of 1873, and, as we gather by the directors' report, has been worked with a steady determination to succeed, and with a success that is worthy the emulation of some undertakings which have made a great deal more noise in the mining world. It is no small matter now-a-days to be able to pay costs, let alone a dividend, for the first year's working, and yet this has been done, though the dividend has been paid only on the new shares, because—and here is another matter worthy of note—the Furzeham Company, who were the original owners of the mine, and are the largest shareholders, "have offered on this occasion to waive their right to a dividend on the shares reserved by them as their interest in the property," although, as appears by the accounts, there was a sufficient balance to pay them the same dividend as the rest of the shareholders; the object being, as explained in the report, to establish the company on a sound financial basis.

The secret of success in this case seems to be that a judicious selection has been made of the various improvements in machinery, to which attention has been frequently drawn in the *Journal*, notably Husband's pneumatic stamps and Blake's stonebreaker, the more general adoption of which would, undoubtedly, clear away many of the difficulties with which our mines are beset.

The Cariggan Company has been formed to work an immense deposit of tin-bearing rock in Roche, which has been worked with great success for some years on a small scale. This deposit is well known, and is very highly thought of by all who have had an opportunity of seeing it. The workings take the form of an immense quarry, and will resemble the famous Mulberry Mine. At Cariggan, however, the tin is in greater quantity, and is disseminated through the whole of the stone, instead of, as at Mulberry, existing merely in the "leaders."

The mines are both owned almost entirely by North Country people, where mining is carried on with an amount of success and to an extent little dreamt of even in Cornwall; and from the well-known cautiousness and steady perseverance which characterise our northern friends, we look upon it as a favourable omen that some of their capital and experience is finding its way to our westernmost county.

#### REPORT FROM CORNWALL.

March 12.—There is clearly nothing for it but patience. We have surely touched a point now at which it will not pay to send home the Australian tin produce, and, that being so, whether we have a further fall or an immediate rise, or whether matters remain for a while as they are, the balance must in the end be restored. The latest bugbear is a threatened strike of the tin-plate makers in Wales. But that can have no permanent ill effect upon the market. The demand for tin-plates will go on just the same, and if the manufacture is checked for awhile it must proceed with all the greater vigour afterwards. The movement for the reduction of wages, which commenced in the St. Just district, and is now general there, is rapidly spreading. It is inevitable that this should be so. Nothing can be done at this juncture by an insistence on what are deemed the rights of any one class. Adventurers must bear the brunt under any circumstances; let them be assisted by the sharing of the burden between lords, agents, and men, and it will be borne until better times come. The movement for the return of the calendar month is spreading, but not without difficulty. At Boscawell Downs there has been a strike against it, and the managers were compelled to give way. At Botallack the tinworkmen refused to take bargains at the prices offered. A little consideration will surely show the working miner that, as we have said, the burden must be shared, and he is so far fortunate, where a mine is properly managed, that if he chooses to work a little harder—not so hard, indeed, as he would be obliged to do elsewhere—he would keep up his amount of wages, though the rate may have fallen off. And whatever may be said in favour of the five-weeks month—and we have always held, with Capt. Teague, that there is much in its favour—the return to the old system has this element of justice and extended economy about it, that it cuts the pay of the agents even more decidedly than it does that of the men. There is no way in which they can recoup themselves.

Complaints are again rife of the coals supplied to the Cornish mines. Whatever was the case, there is not the slightest necessity now that mines should be supplied with "dead small," respecting which it is difficult on occasion to determine by casual analysis whether it more nearly resembles "dirt" or "wet mud." If the mines imported for themselves we believe they could, as a general rule (some are very fairly off now), secure a supply of better quality at a direct saving expense. There has not for many years been that economy in the consumption of coal that there should have been, especially considering the increased pumping charges in depth. But there cannot be economy of coal if there are no "coals" to deal with. Another direction in which great economy may be effected is amalgamation. This is nothing new in Cornwall, where there are few old sets which do not include the working of several concerns. But in the mining district of late years there has been far less of this than would have been profitable. There might be more partial amalgamation or general; there might be a union of the execution of joint drainage works analogous, as we said the other week, to the old county adit. There may be such a general and complete amalgamation as has been projected, not adopted, between Wheal Agar and East Pool. In days like these everyone who has the interest of mining at heart should turn his attention to every quarter from which relief may be obtained.

It is the last feather that breaks the camel's back, and there are not wanting indications that the last attack of the smelters upon the interests of the mining population (for it is regarded in no other light), their reductions of the tin standards by 4½ per ton may rouse our mines to that action which has been so long talked of. It caused great surprise to those interested in tin mines, and resulted in the resolution on the part of some of the largest adventurers not to sell any ore at the present prices. It is not at all improbable that the large mines may determine to smelt their own ore, instead of any longer submitting to the antiquated and objectionable system under which their products are now disposed of. The difficulties are not great at Trumpton Consols, where the tin has been stocked for some time, rather than sell at the present figure; a call of 10s. per share has been made. The difficulty of cost-book mines under such circumstances is their want of floating capital; but the course taken at Trumpton appears wise.

A paper "On the Antiquity of Mining in Cornwall and Devon" has been read by Mr. R. N. Worth, author of "Historical Notes on the Progress of Mining Skill," before the members of the Plymouth Institution. It has been the custom in the West to trace mining back to the days of the Phoenicians. According to Mr. Worth's argument, it is of far higher antiquity still. He holds that there is direct historical evidence of the existence of mining in the West 2300 years ago; that there is inferential evidence derived from the occurrence of bronze implements and weapons in different parts of Europe the tin of which he contends came from Cornwall; that would double that period. And finally, that there is geological evidence based upon the conditions under which traces of the "old men" were found in the stream works at Carnon and Pentuan, which would antedate the commencement of mining, and consequently, the use of metals to a time when the Mammoth either still existed in the West of England or had not long disappeared, and when the general level of Cornwall and Devon was at least 20 to 30 ft. higher than it is now.

A definite start has at length been made with the scheme for carrying a railway through the South Hams. A meeting has been held

at Modbury this week, when it was decided to call in the aid of the Devon and Cornwall Company. The idea is that the line shall be on the narrow gauge, and that it shall extend from Plymouth to Dartmouth. It will be made in sections. The country is one of the richest in the West of England, but utterly destitute of railway accommodation.

The concluding part of the report of the meeting of the Society of Mechanical Engineers, at Penzance, has been issued. It is like the former part, profusely illustrated, and contains much valuable matter.

The unfenced mine shafts are enlisting attention again. Not long since a man fell down an unfenced mine shaft in the Truro Union, and was killed, and correspondence arising from this occurrence has been read before the Truro Board of Guardians. Dr. Le Neve Foster, the Inspector under the Mines Regulation Act, wrote to the Home Secretary on the subject, and in the course of his letter said:—"It is supposed that the man slipped in while trying to gather some sticks at the edge of the shaft. I find that the shaft is just within 50 yards of a road. The owner is the Rev. St. Aubyn Moleworth St. Aubyn, of Clowance, near Camborne. Had the shaft been fenced I do not think the accident would have happened. Am I to take any further proceedings or not?" In a subsequent communication Dr. Foster acknowledged the receipt of a letter authorising him to prosecute the owner of the shaft, and then went on to say:—"I called on Mr. Chilcott, solicitor, Truro, with regard to a summons; and he pointed out to me that I had, perhaps, misled you by the use of the word 'owner' in my letter of the 3d inst. Mr. St. Aubyn Moleworth St. Aubyn is the landowner and proprietor of the mineral rights, not the 'owner,' as defined by the Act. I am informed that the sett is not under grant, and, therefore, there is no 'owner' under section 13. Mr. St. Aubyn will be interested as a 'person interested in the minerals of the mine.' I, therefore, write to you again to ask you whether I am to prosecute the 'lord' of the mine as proprietor of the mineral rights. There are other shafts in Mr. St. Aubyn's land in unfenced ground and unfenced, which I reported to the local sanitary authority in June last, and which have not been attended to." A third letter was read from Mr. Liddell, the permanent Under-Secretary of the Home Office, to the Secretary of the Local Government Board. In it the writer said:—"I am to acquaint you that a prosecution is about to be instituted in this case, and to request that you will set in motion the nuisance authority with respect to the shafts referred to in the last paragraph of Mr. Foster's second letter."

#### REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

March 12.—The South Staffordshire Iron Trade continues in a most depressed and unsatisfactory condition, and every week's delay in settling definitely the price of coal and the wages questions now under consideration will only tend to aggravate the severity of the crisis. The reductions already announced in coal by the Earl Dudley and other leading firms are held to be inadequate to the measure of relief of which the iron trade stands in such urgent need, and the general opinion is that they will have to be supplemented before the ironmasters can experience any real benefit. It has been decided to give notice to the blast-furnace men of a reduction of 10 per cent. in the rate of wages; and the council being held to adjust the rate of puddlers' wages will doubtless effect a proportionate reduction in that branch of the labour market. Business alike in the pig and finished branches of the iron trade remains virtually in a state of suspense, and the quotations of such firms as are seeking orders are most irregular. A reduction of 1½ in the price of pig and 2½ in the price of finished iron of branded qualities is expected to be declared on Quarter-day, if not earlier; but it is improbable that anything will be done in this direction by the leading firms until the preliminary questions already referred to are disposed of. Second-class firms are accepting orders at 15s. to 20s. per ton under the prices ruling at the commencement of the quarter, unmarked bars having changed hands at 11½, and even less, although the quotation of first-class houses still remains at 14½ per ton. The sheet makers are hopeful of being able to carry into effect their recent proposal as to extra prices for distinct gauges, instead of classifying the distinctions of gauge into groups as heretofore. It was stated on 'Change to-day that the assent of not less than 48 sheet makers had been given to the revised list of extras. The business transacted at the ironmasters' meetings—in Wolverhampton yesterday, and Birmingham to-day—was of very trifling extent, buyers declaring that at the current rates, or anything approaching them, it was impossible to place orders.

The Earl of Dudley has reduced his price for best house coal 4s. and forge coal 3s. per ton, and the example has been followed by other leading firms in the thick coal district. The general quotations for coal are very irregular, concessions having been almost continuously made for some time past by the thin coal masters. The Cannock Chase firms, in accordance with the resolution passed last week, quote a drop of 5s. on best house coal, and proportionately on other qualities. Their present prices (loaded into boats) are:—Best deep coal, 15s.; best shallow, 14s.; hard coal, 13s. 6d.; deep rough slack, 10s.; and fine slack 7s. 6d. per ton of 2400 lbs. These declared reductions in price, which came into effect last Monday, have been accompanied by an intimation that wages will be reduced 1s. per day to thick coal miners and 9d. per day to thin coal miners. It remains to be seen how this proposal will be received by the men, who may be expected to pronounce their opinion upon it very shortly. Meanwhile all is uncertainty and suspense.

The prospects of the Sandwell Park sinking are officially reported to be somewhat brighter, although the shares have declined to 175, buyers. A fall has taken place in the shares of John Bagnall and Son (Limited), sales having taken place as low as 7½; Chillington iron are 7½; Ivy House and Northwood Colliery, 13 prem.; Patent Shaft, 63 prem. The easier tendency in the market for shares in coal and iron companies is solely attributable to the gloomy prospects of trade. Muntz's Metal Company (Limited) pays, as the result of last year's operations, a dividend of 10 per cent., and a bonus of 2½ per cent., besides writing off 10,000 for good will, 4000 for bad debts, and carrying forward a balance of 4080.

Sales of Belgian iron are taking place in South Staffordshire at much lower rates, including delivery, than it can be made for on the spot. Bars, for example, have been sold as low as 9½, delivered in London. The iron referred to is, it should be stated, of very common quality.

The Lawton Ironworks, near Shifnal, have been purchased by Messrs. Edge and Sons, of Coalport, the well-known manufacturers of chains, ropes, and engineering ironwork. The foundry and gas-holder works of Mr. Robert Poole, at Malinslee, are undergoing considerable enlargement. The Madeley Wood Company have erected a new blast-engine at their Blisshershill Works. Despite these extensions, however, the iron trade of the Shropshire district remains in a very unsettled and unsatisfactory condition.

Trade in North Staffordshire is very quiet, and until the labour market is brought somewhat more nearly to its normal condition there is little prospect of improvement.

Black Country hardwares are considerably slackening in demand, and the general prospects of business are discouraging. In the face of a falling trade, 8000 wrought rail forgings in the Dudley district have turned for an advance of 10 per cent. in wages.

**DRAINAGE OF MINES.**—In opening out new mining districts the convenience and economy of the old Cornish system of pumping cannot be doubted, but it is now so constantly necessary to work old and deep mines which have been from time to time suspended, that it is frequently practicable to employ a cheaper system of pumping. In these cases the quantity of water to be pumped can be pretty accurately estimated, and the placing of the pumping machinery at the bottom of the pit instead of the top is much facilitated. Where this system of pumping is applicable the "special" steam-pump of Messrs. Tangye Brothers and Holman, of Birmingham and London, have justly acquired a very high reputation, and as the expensive gearing inseparably connected with the Cornish engine is rendered unnecessary, the new system is likely to become more and more generally in use. The system of pumping by applying the power at the bottom would admit of the use of the best forms of pumps yet introduced, and as it is claimed that the "special" is simplicity itself it is likely to receive fair proportion of patronage. In the pair just completed for a large colliery near Newcastle-on-Tyne, the steam cylinder is placed horizontally on a base plate in direct line with the pump, and the same piston rod goes into both steam and pumping cylinders; thus no fly-wheel, crank, or extraneous gear of any kind is required, and the only moving part which can be seen is the piston rod as it passes to and fro from one cylinder to the other. Each stroke of the pump has the effect at one end of sucking water into the apparatus, and at the other of forcing water, already drawn up, into the discharge pipe, an air vessel being conveniently situated so as to prevent concussion. The pair of pumps just completed, and which we yesterday had the pleasure of inspecting, are of larger than usual dimensions. The steam cylinders are of 32 in. diameter, the pumping cylinders of 7 in. diameter, with a stroke of 6 feet, and the air vessel is 13 ft. high, with an internal diameter of 24 in. The pumps are brass lined, and have four separate valve boxes fitted with multiple valves, and the whole apparatus is mounted upon massive base plates. It is intended to place these pumps at the bottom of a pit 1068 ft. deep, and with 35 lbs. pressure of steam they will force to the surface 18,000 gallons of water per hour in one direct lift. The engines are so arranged that they can be both worked together if their full capacity is required, or if the supply of water is at any time less, either engine and pump can be easily shut off, and the other only need be

worked. With regard to the supply of steam-power, the boiler can, if space permit, be placed in the working close to the pumping apparatus; but if this should be found inconvenient, steam can be conveyed by a pipe down the shaft from the boiler at the top.

#### REPORT FROM LANCASHIRE AND CHESHIRE.

March 12.—The topic to which all attention is being directed in this coal field at present is that of the wages of the miners. At the meeting of the South-West Lancashire Coal Association, held in Liverpool on Monday, the subject was fully discussed, and a resolution was unanimously adopted that notice should be given of a reduction of wages at the rate of 15 per cent., the reduced scale to commence at the pay succeeding the date on which notice was given. The effect produced upon the miners was unquestionably of a very unsatisfactory nature, for it happened, unfortunately for the employers in this district, that they were the first to announce a reduction, save in the Oldham and Ashton districts, where the question has been referred to arbitration, and a reduction after the rate of 10 per cent. has been ordered. Since Monday, however, has appeared an intimation from several other districts of a proposal to reduce wages, and it is hoped that this will have a good effect here. There is a very good feeling at present between both masters and men, and there is a very anxious desire shown on both sides that this should be maintained. Anything in the nature of a strike just now would have an effect upon trade which could not fail to be disadvantageous to both parties in the dispute, and there is, therefore, a deep desire to avert it.

There continues a fair demand for the better qualities of gas and house coal, but for inferior descriptions it is almost impossible to get a fair remunerative price. In the Wigan district bingy has been sold as low as 8s. per ton, and for slack 6s. and 7s. per ton at the pit's mouth has been taken. The general rates are 8s. to 9s. per ton for slack, and 11s. per ton for bingy.

There is still no change for the better in the Iron Trade. The spirit reported last week has not been maintained, and in most departments things are still very bad. Reductions in ironworkers' wages are contemplated, and this subject will, no doubt, be brought prominently forward in a few weeks.

A question of considerable importance to colliery proprietors generally was before the St. Helen's magistrates on Monday. Two drawers were summoned for neglect of work, and on their behalf the point was raised as to whether they, being paid by the colliery who engaged them, were servants of the owners of the colliery. The Bench ruled that, according to the spirit of recent legislation, all persons who worked in the mine were amenable to the regulations, otherwise it would be impossible to carry out the requirements of the law. A fine was, therefore, imposed. The justices refused to grant a case on the point of law.

#### REPORT FROM SCOTLAND.

March 11.—There has been an extensive business done in the Warrant Market during the past week, and the fluctuations in value have been considerable. The price advanced from 92s. on Tuesday last week to 95s. 6d., which was paid on Friday, but the closing price that afternoon was 94s. On Monday the opening price was 94s., and a large business was done down to 91s. 6d. Yesterday the tone was decidedly dull, and numerous transactions took place from 90s. 6d. to 88s. 9d., closing with buyers at 89s., and sellers asking 89s. 3d. To-day prices have been most irregular; business was done as low as 88s. 3d., from which it rallied to 91s. 6d., receded again to 90s. 3d., and closed about 90s. 9d. In such a speculative market the quotations for makers' iron are of necessity very irregular, and sellers are rendered more cautious by the dread that the reduction of wages now taking place in the mining districts may cause some interruption to the production.

	No. 1.	No. 3.
Gartsherrie at Glasgow (deliverable alongside) .....	100 0	91s. 6d.
Coltness ditto .....	102 6	93 0
Summerlee ditto .....	100 0	91 0
Carnbroe ditto .....	95 0	91 0
Monkland ditto .....	83 0	91 0
Clyde ditto .....	83 0	91 0
Govan, at Broomielaw ditto .....	93 0	91 0
Langloan, at Port Dundas ditto .....	100 0	92 6
Caldar ditto .....	100 0	92 0
Glenarnock, at Ardrossan ditto .....	97 6	92 0
Eglington ditto .....	92 0	90 0
Dalmellington ditto .....	92 0	90 0
Carron, at Grangemouth, selected, ditto .....	100 0	—
Shotts, at Leith ditto .....	100 0	92 6
Kinnell, at Boness ditto .....	95 0	91 0
Bar iron .....	£12 10 0	—

	Tons	12,424
Week ending March 8, 1873 .....	8,664	—
Week ending March 8, 1874 .....	8,760	—
Total decrease since Dec. 25, 1873 .....	31,508	—
Imports of Middlesbrough pig-iron into Grangemouth:—		
Week ending March 7, 1874 .....	1,940	—
Week ending March 8, 1873 .....	1,635	—
Increase .....	305	—
Total increase for 1874 .....	12,002	—

The somewhat violent fluctuations which have taken place in the price of pig-iron since last week were undoubtedly influenced by the probability of a strike ensuing on the announced reduction in colliers' wages coming into force. This was the first thought of merchants, and the market was somewhat "rigged" to meet their demands, but on quieter consideration they changed their opinions, and prices came back fully 6s. a ton. The question of vital importance still is—"Will the colliers submit to the reduction, or will they strike?" After a pretty minute enquiry, we believe that the colliers will not strike unless the drop is 2s. or 3s. a-day, and this, we believe, they will not submit to without a struggle. What effect the notices of reduction will produce will not be known generally till the beginning of next week, and if a strike ensues arrangements have been made to "blow out" a large number of the furnaces.

There is a dead quietness in the Finished Iron Trade; and although makers are making great efforts to keep their machinery in motion, they are meeting with little success. A few trifling orders for bars for shipment are offering, but the export demand is very limited, that for this week being scarcely more than a third of the corresponding week of last year. The shipbuilding trade is fairly brisk on the Clyde at the present time, but a good portion of the iron is coming from the South. Makers of heavy forgings are kept going, and so are machinists, but melters are quieter, and new work scarce. The boiler makers at Leith have gone on strike, the employers having refused to grant them 6d. extra per day as "black money."

Coals continue in buyers' favour; and although the spring shipments have set in, the market is rather quiet than otherwise. No new general reduction has taken place by masters who are selling under ordinary rates. The quantity sent foreign and coastwise from the Scotch ports for the week just ended amounted to 41,232 tons, including 13,917 tons from the port of Ayr for February, against 27,568 tons for the same week last year.

In the various mining districts of Scotland conferences or meetings have been held to bewail the announced reduction in wages, and to consult how it is to be avoided. Some think the true panacea would be a strike, others a further restriction of labour, while the Ayrshire miners have resolved to ask the Glasgow Conference to decide whether "a fine of 20s. or so" should not be inflicted upon any district or colliery which refuses to limit the "darg" to the required extent. Others, again, have actually struck work in anticipation; and some, after having been out in the cold for a couple of weeks, have accepted of the reduction, and are now threatened with a second drop of 1s. per day. Mr. McDonald is still fondling his "restricted darg" theory, and is so successfully imitated by his followers that it is difficult—if even when facing the inevitable—to forecast the future, a word will turn them either way. Let us hope that for once he will lead them in the right path.

A Correspondent, writing on the Restricted Output of Coal, says—"It is well known that the United States of America have so increased their blast-furnaces in the last three years that now her capable production of pig-iron exceeds her wants; and thus we have lost our largest customer for the article in the smelting of which in 1872 was consumed 20,000,000 tons of our production of coal. Other countries, such as France, Germany, Sweden, Austria, Russia, Australia, Chili, Nova Scotia, Brazil, Japan, the East Indies, &c., are all developing their own supplies of coal. In New South Wales coal mining is going on to great ex-



tent. The production is now over 1,000,000 tons, and is only limited by the demand for export. New mines are opening out, the seams are of great thickness, and the area of coal-bearing strata equals that of Great Britain—quality of coal being equal to Newcastle. The Japanese Government have got out a mining engineer (Mr. Martin) from England, for the purpose of scientifically mining their coal, and will be able to supply steamers in China at a much cheaper rate than we can do from this country. The East Indian Government have also got out Mr. Ness, mining engineer, from Staffordshire, to open out the coal fields in Berar and Central Provinces. Coal seams there extend to a great thickness—over 40 feet thick—within 200 ft. of the surface, and over a large extent of country, so that they will be cheaply wrought. A railway, 50 miles in length, connecting the coal field to the Great Indian Peninsula Railway is about finished, and will convey the coals to Bombay. There is also the Ranajunge coal field, 121 miles from Calcutta, largely worked by native labour at a depth of 134 ft., and supposed to extend over 500 square miles. In view of such development of native coal in the East, the Peninsula and Oriental Steam Company have resolved to send out screw-colliers to carry native coal to the different stations in the East, and thus on all hands our market for coal gets contracted. Our trade gradually gets restricted, and depend upon it, if the miners push things to extremity by strikes, &c., the result will be serious for themselves.

#### REPORT FROM DERBYSHIRE AND YORKSHIRE.

March 12.—In pig and manufactured iron a good business is being done in both North and South Derbyshire, more especially in the Sheffield trade, large consumers of the Derbyshire furnaces. At Sheepbridge there are five furnaces in blast, whilst there is no falling off at the works on the Erewash Valley line. Pipes, pillars, and general castings keep the foundries well going. The Coal Trade is by no means in a satisfactory state, not only as regards the demand, but also as to the wages question. The men for a long time have revelled in extraordinary high wages, owing to the very high price of coal in the early part of last year. Since then the cost of coal to the public has fallen in some instances 50 per cent., but the workmen still consider that there should be no reduction of wages. Some few weeks since the Clay Cross miners accepted a reduction of 15 per cent., and a week or two since those engaged at the Eckington pits received notice that they would have to submit to a reduction, to which they demurred. To prevent any unpleasantness, at the request of the agents of the Miners' Association, the employers recently agreed to postpone the reduction for six weeks, so the matter rests for the present. To show that it is impossible for the present rate of wages to be maintained we may say that coal is now being sold at 10s. per ton at some of the pits, which last year realised 19s. per ton. The trade in house coal in the metropolis has been very quiet for some time, and although the change in the weather during the last few days has made some little difference, yet there is every appearance that we shall have an unusually quiet summer, and that prices will be even lower than they now are.

In Sheffield there has been no change whatever in the state of the general trade. Several branches are very quiet, and many of the workmen are only working from three to four days a week.

On Wednesday a rapidly improvised meeting of the South Yorkshire colliery owners was held at the King's Head Hotel, Barnsley, for the purpose of considering the wages question. A number of the colliery owners of North Derbyshire were present, but no resolution whatever was come to. In plain terms, the feeling was that each colliery owner or firm should act on its own account. The feeling is general that wages must come down, but to what extent even colliery owners are not agreed. Having been in communication with both sides, we think, as the *mediator* in *re*, the proprietors might fairly ask for a reduction of wages to the extent of 15 per cent. This, we believe, would be acquiesced in by the men, who are led by Messrs. Normansell and Casner, whose practical and moderate views are far preferable to the insane wanderings of gentlemen who have been pushed forward into high positions.

Before closing my weekly notice, I am sorry to find that Mr. McDonald blames our mutual friend, Mr. J. Normansell, for giving me certain information in connection with a small article in last week's Journal. I have no doubt that Mr. McDonald will get over that, and that Mr. Normansell, Mr. McDonald, and myself will be good friends as ever. But it must be recollected that a member of Parliament must in many matters be more reticent than otherwise, and knowing Mr. McDonald's many good qualities, I believe that in the long run they will far overshadow what we may term the natural effervescence of his new position—that of a member of Parliament. I should, however, recommend to him the well-known motto—"The middle course is the safest." We are all pleased to find that such a man as Mr. McDonald is returned to Parliament as the representative of the working men, but we also desire to see him well respected by those whom he will now assemble with, and such, I believe, was the purport of the remarks in last week's Journal, which, I hear, have seriously offended the member for Stafford.

THE MECHANICAL VENTILATION OF MINES.—That collieries can be much better ventilated by mechanical means than by what is known as the furnace has been forcibly illustrated by a series of experiments just made at the Darfield Main Colliery, Barnsley. In October, 1872, the coal near to the furnace caught fire, and to extinguish it the entire workings had to be inundated with water. In getting the colliery into working order it was determined to secure the ventilation by means of a fan, and for that purpose the services of an eminently practical man, Mr. Easton, of the firm of Easton and Tallentire, of the Alexander Foundry, Leeds, were called into requisition. He brought out and patented a fan which for the results it has given far exceeds anything known in the history of mining, and which promises to him the well-known motto—"The middle course is the safest." We are all pleased to find that such a man as Mr. McDonald is returned to Parliament as the representative of the working men, but we also desire to see him well respected by those whom he will now assemble with, and such, I believe, was the purport of the remarks in last week's Journal, which, I hear, have seriously offended the member for Stafford.

Revolutions per minute.	Steam gauge.	Cubic feet per minute.
32	1 4-10ths inches.	921,000
41	2 1-10ths "	121,000
50	3 1-10ths "	173,000
58	3 9-10ths "	207,500

It appears, notwithstanding the above results, that with a water gauge at 1½ in., and with 58 revolutions per minute, at least 350,000 cubic feet of fresh air could be sent into the pit every minute; and with 70 revolutions per minute, which could be easily obtained, the quantity of air going into any colliery would be almost double what would be required in the largest colliery in England.

#### TRADE OF THE TYNE AND WEAR.

March 12.—The Coal Trade continues in a very depressed state, and as stocks are accumulating, and buyers are holding off for still further reduction, in addition to the heavy falls that have taken place lately, it is difficult to guess how far the movement will proceed. The Tyne and Wear are crowded with vessels of every description, especially sailing.

The Permanent Fund, established here a few years ago for the relief of miners injured by accidents, and for the benefit of widows and children left by men killed by accidents, &c., has proved a most complete success. For a long period the progress made by this excellent society was only slow, but during the past two years it has been very remarkable. The number of members is now large, and the funds now in hand are apparently ample for all the purposes contemplated. A few days ago a meeting was held, for the purpose of establishing a permanent fund in connection with it for the relief of old miners who have escaped accidents, but have been rendered incapable of working in the mines on account of old age. The meeting was well attended by delegates and officers connected with the Miners' Association in the district, and also by Mr. Stobart and other prominent members of the coal trade. Mr. Blyth and others have collected some statistics respecting the age and period worked by miners in the pits, which are curious, and will no doubt prove useful; many of the men have been employed 50 years and upwards in the mines. There is every prospect of this fund being established in a short time.

Mr. William Crauford, the able principal agent for the Durham Miners' Association, has again been subjected not only to annoyance, but positive insult at the hands of some of the members of the society, who have, for reasons best known to themselves, conceived a dislike to him. The delegate for Barnston had given notice of a motion, which in the course came up for discussion on Saturday last, to the effect that the executive give Mr. Crauford three months' notice to quit their service. One of the reasons given for this step was so trivial as to be utterly undeserving of any notice, and the other will, we think, be considered by all reasonable people as reflecting the greatest credit on the gentleman thus wantonly attacked. It appears that Mr. Crauford sanctioned a motion made before the joint committee to the effect that if the men at any colliery should stop the works without just reason, and thus occasion serious loss to the owners, reasonable compensation should be allowed to the owners for such loss. This proves that Mr. Crauford is not a one-sided partisan, but a man who loves fair play and has the courage to act up to his convictions. The motion alluded to was only seconded as a matter of form, and was, of course, negatived by a great majority, and afterwards a vote of confidence was unanimously passed to Mr. Crauford.

In Cumberland the Coal and Iron Trades are in a very depressed state. The coalowners here are opposed in the markets by the Scotch coalowners, and also by those of the Tyne. A meeting of owners was held a few days ago at Workington, when it was determined to reduce the coals again 2s. per ton, and also to give notice to the miners of a reduction of 10 per cent.

INSTITUTE OF MINING AND MECHANICAL ENGINEERS, NEWCASTLE.—A meeting of members was held on Saturday, in the Wood Memorial Hall, Newcastle (Mr. A. L. Stephenson in the chair). A large number of new members were elected, and the Chairman observed that it was very gratifying to find their numbers increasing so rapidly, more especially as they had amongst their new members some whom they might expect to become presidents of the Institute. Mr. T. F. Hedley, of Sunderland, read a paper on the subject of the valuation of mines for the purposes of local taxation. Mr. Hedley divided his subject into three parts: first, the statute clause in force for the valuation of property; second, the expounded law or decisions of the superior courts on the statutes in force; and third, the application of the statutes, and the decided cases to the valuation

mines for the purpose of local taxation. In the course of his remarks Mr. Hedley contended that the value of a current-going colliery could not legally be limited by the rents paid for the coal alone. Referring to the exemptioning of iron mines, he pointed out that there was no more difficulty in rating an iron mine than there was in rating a coal mine, as the ironstone now possessed legal ascertained valuations; and that, as regarded the tin, lead, and copper mines, &c., there was no difficulty in estimating the annual value of the ores for assessment. In conclusion, Mr. Hedley stated that he had valued the surface lands and buildings connected with the iron mines in the Forest of Dean, and the tin and lead mines in the county of Salop, and that he had no difficulty in applying the principles of hypothetical tenancy to the rating of the surface lands, buildings, and machinery. A short discussion afterwards was raised upon the mode of valuing the cottages connected with collieries, and Mr. Hedley undertook to lay his views before the members in a supplementary paper. On the motion of Mr. Southern, a Government Inspector, seconded by Mr. H. T. Morton, a cordial vote of thanks was given to Mr. Hedley for his valuable paper.

#### REPORT FROM MONMOUTH AND SOUTH WALES.

March 12.—A dark cloud is beginning to gather over the district, and there is little doubt that there will be renewed difficulties in connection with the staple trades. The Iron Trade is drifting into a most unsatisfactory state, and makers seem to be convinced that it is no use indulging any longer in the expectations which were formed at the beginning of the year. For three months we have been waiting anxiously for their realisation, but such an ultimatum appears to be farther off now than ever; indeed, the fact is only rendered more apparent every day that buyers have long ago made up their minds not to give out any more orders than they are really bound to until some considerable reductions are made in quotations. All must, therefore, come to the conclusion that prices must now recede again, or trade will leave the district altogether. Indeed, this state of things seems at present to be common to the whole country. The crisis is, no doubt, close at hand, and before it is over we shall in all probability witness some further hostilities between masters and men. If the lowering of quotations rested with the manufacturers probably they would have prevented things getting into the state they are at present; but they could not help themselves. They have maintained quotations more out of necessity than through anything like obstinacy. They derived little or no benefit from the high prices, for it has been generally admitted that ironmaking was more profitable to makers at the low prices which were current some years ago than it has been of late. The cost of everything used in the manufacture has been greater in proportion since the high prices prevailed than they were previously; and the fact is that the more iron was raised in value the less profitable it became. If we look back upon the rising of prices it will be seen that while rails, the staple manufacture in South Wales, advanced from 7s. 6d. to 9s. and 10s. per ton to 17s., 20s., and 25s. per ton; coke advanced from 20s. to 40s., and pig-iron from 4s. 10s. to 7s. 8s., and 9s. per ton. It was quite an exceptional case in this district when more than 11s. per ton was obtained for rails. Then, added to the above must be the almost doubling of the wages rate. During the last fortnight rails have been quoted down to 9s. 10s. per ton, and it is not surprising that makers say they are unprofitable. They have, however, kept their works going so long as they have in the expectation that things would improve from week to week, but their expectations have not been realised. A considerable change must now come over the trade; and before ironmasters can make the necessary reductions in quotations the cost of fuel and labour must be materially lowered, and a general reduction in the wages must be the result. Therefore, it is apprehended that hostilities between masters and men will again arise, and the trade will probably be completely deranged. If, however, the workers will look at matters in a reasonable light the trade may yet be prosperous; for it is pretty certain that when prices can be agreed upon there will be a good number of orders given out for most descriptions of iron. The exports of iron during the last month amounted to a total of only 13,188 tons, of which 8098 tons were cleared from Cardiff, 10,250 tons from Newport, and 4847 tons from Swansea.

The Patent Nut and Bolt Company, which has works at Cwmbran, Monmouthshire, is gradually becoming one of the most prosperous concerns in the kingdom. The dividend for the past half-year has been at the rate of 10 per cent. per annum; and, after adding 21,000l. to the reserve fund, there is a respectable balance to be carried forward. The company's works are in full employment upon profitable contracts.

The state of the Tin-Plate Trade is most unsatisfactory. The workers have for some time been agitating for an advance in the rate of wages, some of them demanding as much as 20 and 30 per cent., in order to have their wages assimilated to the rates paid in the English districts. Knowing, however, the great differences which exist between the Welsh trade and the English trade, the employers have refused to concede the demands of the men. If the latter press their claims a general lock-out is likely to take place at the end of the month.

A change is also taking place in the Coal Trade, and it is not expected that the demand will be as brisk again as it has been until prices are lowered considerably. Some material reductions have already been made in house coals. A seam of coal, 3½ ft. in thickness, known as the "No. 3," has just been struck at the Hafod Pit, near Pontypridd.

The reports of coal last month were as follows:—Cardiff, 227,251 tons, as compared with 226,577 tons in Feb., 1873; Newport, 39,391 tons, against 21,534 tons; Swansea, 43,294 tons, against 41,302 tons; and Llanelly, 7332 tons, against 4834 tons. The coal shipments coastwise were as annexed:—Cardiff, 52,237 tons, against 91,973 tons in the corresponding month of last year; Newport, 42,880 tons, against 61,394 tons; Swansea, 19,085 tons, against 21,980 tons; and Llanelly, 6240 tons, against 9174 tons. Swansea exported also 15,457 tons patent fuel, and Cardiff 2962 tons.

#### Meetings of Public Companies.

##### WHITEHAVEN IRON MINING COMPANY.

The ordinary general meeting was held yesterday at the London Tavern, the Right Hon. the Earl of Devon in the chair. The notice calling the meeting was read by Mr. J. W. MARSHALL, the secretary. The directors' report was taken as read.

The CHAIRMAN said that although there was not a sufficient number of shareholders present to form a quorum, still as several shareholders were present he would proceed to call attention to some of the points in the report, although they would not be able to transact any business or pass any resolution; and if at the end of an hour a sufficient number of gentlemen were not present to form a quorum the meeting must be adjourned for a week. The object of the extraordinary general meeting, which was appointed to take place immediately after the ordinary meeting, was to alter the Articles of Association, so as to enable a smaller number of shareholders to form a quorum. He would call attention to some few salient points in the report. The directors had considered that they would best serve the purposes of the shareholders, and do most justice to the position of affairs and place the information before them more acceptably, if they confined themselves simply to introducing a few of the leading points connected with the subject, and leaving the plain straightforward report from the manager to tell its own story. There were one or two points in the report which were of special importance to which he would direct the attention of the meeting. In the first paragraph of the report it stated "The plan or section of the mine attached to the last report showed the extension of levels to June 30, and it was stated that, according to the estimates of the manager, besides the ore extracted from the mine, 54,000 tons of ore had been opened out as reserves. It would be observed on looking at the present report that the ore now laid open amounted to 89,125 tons, including the original quantity, with the addition which had been laid open since that time down to December 31. The working of the mine had been continued, and a larger or smaller number of men had been employed up to the present, and although the quantity carted away from the mine had been somewhat less in the half-year to which the report applied than in the previous half-year, that had been owing in a considerable degree to the greater difficulty of transmitting the ore, and the difficulty of finding cartage during the fall, when the roads were in a bad state, and the contractors were less disposed to put their horses and carts on the road. At the same time it was satisfactory to observe, from paragraph 3, that "an increased price for the ore having been realised the deliveries have amounted to 4106, 3s. 8d., giving an average price of 11. 6s. 8d. per ton, as against 11. 5s. 3d. for the previous six months." In the present state of the iron and coal market he would be a very bold man who would say how far that would continue, therefore the directors stated the fact as regarded the six months to which the present report referred. After all, the great difficulty with which the directors had had to contend had been the want of easy communication from the mine to the furnace railway; he trusted that those difficulties were

now in the way of being prosperously overcome. For the line which was to run from the mine to Ravensglass nearly all the land had been procured under terms which the directors did not think unreasonable. The contractor for the line had commenced work, and on March 4 thirty men were employed on the line, and in proportion as they came into possession of the land the staff would be increased, and the works pushed on with rapidity consistent with efficiency and completed in six months. The gauge, as it was stated in the last report, was to be extended from 2 ft. 6 in. to 3 ft.; one main consideration which weighed with the directors was that it would be easier to get rolling stock for the 3 ft. gauge which existed in other parts of the country. The directors thereby proposed to revert to the Board of Trade, who had power to give the company permission to apply to the Board of Trade, as was originally intended. The directors saw no reason to doubt that the railway would be constructed within at least 12 months from the period of its commencement, and if the weather in spring and summer were favourable, and the contractors were not impeded by unforeseen difficulties, he hoped a considerable portion would be opened at an earlier period. As regards the lease from Lord Leonfield, he was happy to say he believed that all difficulties had now been removed, and although the lease had not yet been finally executed, there was no doubt that it would be at an early period, and the company would be in possession of the mine for 25 years. The manager in his report stated that considerable progress and improvement had been made, and he now entertained a more favourable view of the prospects of the company than circumstances hitherto had enabled him to do. Without endeavouring to excite any unreasonable expectations, the directors felt justified in saying that the affairs of the company were going on in an encouraging manner, and they hoped in a satisfactory manner.

Mr. ANDERSON asked whether the contractors were bound to complete the railway in any given time?—The CHAIRMAN said that the first section was to be completed in six months, and the whole in 12 months. The line was commenced on Feb. 18. Some unimportant questions then ensued, after which, in the absence of a quorum, the meeting was adjourned to Friday next, at the same time and place.

CAPE COPPER.—At a meeting of the directors of this company, held on Wednesday, a dividend of 20s. per share, free of income tax, was declared, payable on March 25.

INDUSTRIAL COAL AND IRON COMPANY.—The annual meeting of proprietors was held on Monday, when it was reported by the directors that the Dunston Collieries had been worked without a single accident, while the new sinking was likely to be finished in about three months. The machinery at that sinking would be capable of raising 400 tons per day. At the Woodhouse Collieries a range of buildings had been erected during the year. At No. 2 pit for the working of the Haigh Moor, and ultimately the Silkstone coal, it was expected to reach the former seam in June next. At No. 3 pit the Barnsley seam had been reached, but the coal was found to be very much broken with the old workings. The profits for the last quarter had been sufficient to yield a dividend at the rate of about 30 per cent. per annum on the amount expended in purchasing and working the going collieries, but the directors, for certain reasons which they gave, only recommended a dividend at the rate of 11 per cent. per annum, making, with the three interim dividends already paid, a dividend for the whole year of 14 per cent. The Chairman (Mr. Nevill) congratulated the shareholders upon the success already attained, for the Dunston Colliery had not only met all the current expenses, but had been the means of distributing the dividends which had been paid from time to time. At the Woodhouse Collieries a good deal of money had been spent on works and machinery, and he hoped to be able to report that coal had been struck at their next meeting. The pit was being sunk at the rate of 6 yards per week.

PENHALE WHEAL VOR.—At the general meeting, on March 6 (Mr. T. Holroyd in the chair), a call of 1s. per share was made. Looking at the present state of the mineralised lode in the 170 ft. level, and to the very great improvement in the lode since the mine was in fork, it was resolved to offer to the shareholders, *pro rata*, the 379 forfeited shares in the hands of the company, at par, or 16s. 15s. per share, subject to acceptance within two months. Capt. W. H. Martin reported that since they have drained the water by means of the Holroyd engine they have worked and about six weeks for exploring operations, to drain a mine 170 fathoms deep; this has not been an easy task, but they will sink the shaft and extend the machinery in regular course of working they will sink the shaft and extend the levels with greater speed. On this lode in the shallow levels, or gossan bunch, the former workers raised and sold thousands of tons of copper ore of good quality, at a profit. Under and near this copper lode became very rich for tin, in places worth 700l. per fathom; and now they have sunk through the dead floor of ground which traverses through this district the lode has commenced to produce copper, and under and about this copper, without the least doubt, they will have a rich course of tin. The mine never looked so promising as at the present time.

WHEAL SETON.—A special meeting of shareholders was held at the mine, on Tuesday, respecting the overflow of water that will ensue from the stopping of North Roskear. Capt. Teague presided. The quantity of tin raised at present is about 10 tons per month, which at the current low prices results in a loss of at least 200l. per month.—The Chairman admitted that the mine was not worked as it should be, as the low price of tin would not admit of it. He also stated that a rise of 10l. per ton in tin would not be of any good. To be worked profitably Wheal Seton should be worked in conjunction with other mines.—After some further discussion, it was resolved, on the motion of the Chairman, seconded by Mr. John Mayne, of Pool, "That the mine be offered as a going concern, and in case it is not sold as such the materials be offered to the lords."—Mr. Mayne, of Camborne, asked if it was a spirit of vindictiveness that prompted Capt. Teague to knock the mine?—The Chairman said it was not a spirit of vindictiveness, but was on account of the mine losing so much money.—It was also resolved, "That in the event the mine is not sold to the lords the materials be drawn to the surface, and disposed of by private contract or public auction." A special meeting will be held on March 24 to confirm these resolutions.

PARYS MOUNTAIN.—At the meeting, last week, the Chairman (Mr. T. Braby, F.G.S.) stated that the history of the mine had been one of vicissitudes, for after remaining poor it has after every few years alighted upon a remarkable one—the ore being found in bunches—and then there has been a period of weakness; but it appeared to the directors that it would be absurd to allow a mine so renowned, and with the remarkable and promising features of Parys Mountain, to be abandoned. It was ultimately resolved that the capital of the company be increased by the issue of 5000 shares of 1l. each, bearing a preferential dividend of 15 per cent., and to participate equally with the other shares in all surplus profits. The directors have had several interviews with gentlemen interested in the poor copper ore process, and have gone into the matter chemically, but found that to carry it out in their mine would require more capital than they were in a position to raise. It is estimated that at a call of 1l. per ton the ore may be made to yield 2l. 5s. worth of products. It was resolved to have the mine inspected in order to facilitate the placing of the new shares.

[For remainder of Meetings see to-day's Supplement.]

#### ECHOES FROM THE MINING MARKET.

The Tin Market continues in a most depressed condition, the further drop in the standards having completely set at naught the rising hopes of the mining market. It is the opinion of many, however, that we have now seen the worst, that the metal has reached a figure which preclude any importations being made at remunerative prices, and that we may expect to hear of an advance before long. In the absence of any direct information as to the cost of the Australian stream tin, it may help to elucidate matters by comparing the prices realised scarcely a year ago with those that can now be obtained. In March, 1873, first-class Australian ore found a ready market at 90l. per ton; at the present moment the very best cannot command 60l. per ton, and, of course, the inferior ores sell only at a much lower price. We have thus a difference of 30l. per ton—more than 33 per cent. They can only be the result of the most reckless speculation, and if the mines are benefited for the time, the depression which always manifests itself sooner or later does more harm than any short spell of very high prices. It is notorious that the London operations in this metal have been upon an enormous scale, and that prices were at the time we have alluded to forced to an utterly fictitious level. The consequences were soon apparent. A few failures took place, and the whole "ring" collapsed. Cornish mine adventurers would far prefer to receive a moderate price for their produce if they could depend upon a fairly steady market. At present the tin trade is a lottery—nothing more.

The rapid progress made by the works of the Cornwall Minerals Railway is noted with extreme satisfaction. The value of this undertaking can scarcely be over-estimated, for it will enormously stimulate the production of china clay, and bring Cornwall into prominence as an iron-producing county. The central parts contain immense deposits of this metal, and in anticipation of the early opening of the line sets are being eagerly taken up; it is, therefore, likely that ere long we shall see Cornish iron mines taking an important position upon the market.

As an example of the extended scope of the mining market, it is to be noted that stone has now found its way into favour. The Glaisdale Whinstone Quarry Company has lately been introduced, to work a property in the North Riding of Yorkshire. As a new source of investment it has been welcomed, the stability of such undertakings being well known.

It is announced that the arbitration between East Pool and Wheal Agar Mines, referred to in our "Echoes" a short time since, has been concluded, and that the award is signed. At the moment of writing particulars have not transpired. It is a matter for congratulation to note that this long standing dispute has at last been settled in so amicable a manner. In old times the dispute between two mines would probably have ended in litigation (we all remember the South Frances and West Basset scandal), but now we live in the days of arbitration.

JAMES H. CROFTS.

FROM MR. ALFRED EDWARD COOKE (76, Old Broad-street, E.C.).—Business in British mines has again been at a complete standstill; indeed, apart from the fortnightly settlement, which was a very small one, it might be said that there has been no feature in the market. The price of tin is still depressed, and many good authorities, whose opinion is valued, prophecy that this stagnation will continue for some time to come. It is admitted that there will be a revival, but it is feared that it is still somewhat distant. During this period attention should rather be directed to lead mines, such as Roman Gravel, Tankerville, West Tankerville, Rookhope Valley, and others, which hold promise of success. Lead is at all times not subject to such violent fluctuations as the other metals. It is to be hoped that after the resolution authorising the issue of additional capital for West Tankerville is confirmed that the shareholders will readily come forward and subscribe for their proportion. It is most desirable that operations should be pushed forward with the utmost vigour, and with such promising results as certain prospects of the future. The success, the managers will, no doubt, prove that the results they have so long predicted will be realised. Van Consoles have advanced during the week, and advantage should be taken of this rise, as another appeal to the shareholders for more money is freely talked of. There have been several buyers for Rookhope Valley shares, and it is a noteworthy fact that they are from the neighbourhood of the mines. Many applications have been made for Glaisdale



Whinstone Quarry shares. No doubt, the readers of the *Mining Journal* have perused the prospectus of this company which appeared last week. The quarry may be the subject of a permanent investment, and as such I can specially commend it to those who have a prejudice against going into speculative mines. There is no such risk here, the stone is discovered, the demand is great, and on payment of the allotment money there is no further liability. The shares are very low priced, being only 20s. fully paid.

I would advise intending investors to make immediate application for shares, as the list will soon close. With the exception of Emmas, which have declined, the foreign mines have remained steady. The conflicting rumours which are rife concerning the Emma Mine render it hazardous to advance an opinion. All official reports from the mine are most discouraging, and even the staff at the London office venture to confirm them, and proffer gratuitous advice to anyone who may call there. On the other hand, through private sources we learn that the mine is in the most satisfactory condition, and the statements put forward by the company are entirely contradicted. These matters should be sifted thoroughly at the first opportunity, when no doubt the example of the Flagstaff shareholders will be followed by appointing a special committee of investigation. When we except the lowly American hydraulic mines, Richmond Consolidated may be said to be the only mine that has at all realised expectations. Nevertheless, I would even deprecate the purchase of these shares, seeing that no reliance can be placed on the soundness and stability of the American mines already before the public.

# IN LIQUIDATION. GOUROCK COPPER MINING COMPANY (LIMITED).

**NOTICE.**—ALL PERSONS having CLAIMS AGAINST the ABOVE COMPANY are requested to lodge the same with M. F. and J. DUNLOP, Solicitors, Greenock, on or before the 21st day of March next, to enable the Liquidators to DISTRIBUTE the ESTATE of the COMPANY realised by them among the parties entitled thereto, and to WIND-UP the AFFAIRS of the COMPANY.

And Notice is hereby further given, that the Liquidators will not be responsible to any person whose claim shall not have been lodged by the above date.  
ANDREW HARPER, Liquidators.  
Greenock, 26th February, 1874.

# IN LIQUIDATION. THE BALLYCUMMISK COPPER MINING COMPANY (LIMITED).

**NOTICE IS HEREBY GIVEN,** that the LEASES of the COPPER MINES of the above-named company, situate near Ballydeob, in the county of Cork, together with the VALUABLE PLANT, MACHINERY, &c., are FOR SALE, BY TENDER.

Tenders are to be sent to Mr. J. H. R. BRECKELS, No. 6, Guildhall-chambers, in the City of London, Public Accountant, one of the Liquidators of the said company, on or before the 30th day of March instant.

Full particulars and Forms of Tender can be obtained at the offices of the undersigned.  
HARRISON, 5, Walbrook, London.  
(Solicitors for the Liquidators.)  
12th March, 1874.

# TO INVESTORS.

**TWO SPLENDID OPPORTUNITIES SUCH AS ARE SELDOM MET WITH**—one, a COTTON SPINNING CONCERN, ready for IMMEDIATE WORKING, and stocked with the most VALUABLE MACHINERY, principally new—the other, a LARGE IRONMONGERY BUSINESS, at present and for the past 22 years in ACTIVE TRADE, and which has always realised very large profits—ARE NOW OFFERING.

Bona fide investors only are invited to apply for interests therein. Adventurous investors, speculating with the object of receiving promotion money, will not be treated with.

Those only who desire to secure a permanent income on a moderate investment, need apply personally, or address by letter—  
MR. HALLAS, PUBLIC ACCOUNTANT, 32, FAULKNER STREET, MANCHESTER.

Who will furnish the fullest information, and to probable investors furnish letters of introduction to view the properties.

# MINING IN SPAIN.

**OWING** to the present state of matters in Spain, several good MINES of IRON, ZINC, LEAD, and COPPER can be BOUGHT for a MERE NOMINAL SUM. As an investment these will pay handsomely with a little keeping.  
Address, Mr. Woods, Santander, Spain.

**FOR SALE, SUNDRY MINES IN SPAIN,** suitable for small capitalists. Payment by instalments out of profits.  
Apply to RICHARDSONS and WRIGHT, 35, Great St. Helens.

# TO CAPITALISTS, AND OTHERS.

**FOR SALE,** on most favourable terms, a few CHOICE TRACTS of the most valuable COAL LANDS in WEST VIRGINIA, AMERICA, containing TEN or more SEAMS, each of CANVEL, SPLINT, and BITUMINOUS COAL. Each seam being from Three to Eleven Feet in thickness, and easily accessible to railway and water transportation. The titles to the lands are perfect.  
Apply, by letter, to "W.Y.S.," Post Office, Box 458, Bradford, Yorkshire.

# LEAD MINES IN THE COUNTIES OF DURHAM AND NORTHUMBERLAND.

**TO BE LET, ON LEASE,** with immediate possession, the HUNSTANWORTH and NEWBIGGIN ROYALTIES the former about 3534 acres and the latter 200 acres, or thereabouts.  
The Hunstanworth Royalty adjoins the celebrated W.B. Lead Mines, and has for many years yielded large quantities of lead ore, and much of the ground is undeveloped.

For particulars, apply to JOSEPH DODDS, Esq., M.P., No. 4, Spring-gardens, Charing-cross, London, S.W., and Stockton-on-Tees; or Mr. THOMAS J. BEWICK, C.E., No. 4, Queen-square, London, S.W., and Haydon Bridge, Northumberland.

# MINING MACHINERY.

**MESSRS. F. W. MICHELL AND CO. have FOR SALE** several CORNISH PUMPING, STAMPING, and WINDING ENGINES, of different sizes: BOILERS from 6 to 12 tons each: PITWORK of all sizes: CORNISH CRUSHERS; STAMP AXLES; IRON FLAT-RODS; STRAPPING PLATES; and other MATERIALS in general use in Mines, &c.  
EAST CARN BREA, REDRUTH, CORNWALL.

**FOR SALE, OR HIRE,** the following NEW or SECONDHAND PLANT and MACHINERY, in thoroughly efficient condition:—

# VERTICAL ENGINES.

2 Vertical Combined Engines and Boilers	4½ in. cylinder.
1 ditto ditto ditto	6½ " "
3 ditto ditto ditto	6 " "
1 ditto ditto ditto	6½ " "
3 ditto ditto ditto	6½ " "
2 ditto ditto ditto	7½ " "
1 ditto ditto ditto	8½ " "

# PORTABLE ENGINES.

1 Portable Engine	5½ in. cylinder.	6 Portable Engines	9½ in. cylinder.
1 ditto	6½ " "	4 ditto	6 " "
1 ditto	6½ " "	6 ditto	2-7½ in. cylinders.
3 ditto	7½ " "	6 ditto	2-8½ " "
3 ditto	8½ " "	3 ditto	2-9 " "
10 ditto	8½ " "	3 ditto	2-9½ " "

# CRANES AND WINDING ENGINES.

2 Steam Cranes for	50 cwt.
1 ditto	2 to 3 tons (Chaplin).
1 ditto	3 to 4 tons (ditto).
1 Hand Travelling Crane	3 tons.
1 ditto ditto	4 tons.

# PUMPS.

3 Chain Pumps	8 x 4	1 Centrifugal Pump	5 inch.
4 ditto	10 x 5	4 ditto	7 " "
3 ditto	12 x 6	7 ditto	8 " "
1 ditto	14 x 7	4 ditto	9 " "
1 ditto	16 x 8	2 Contractors' Pumps.	
2 ditto	24 x 8	3 Deep Well Pumps.	
3 Woodford's Pumps, double	30 x 10	1 Plunger Pump	10 " "
2 ditto	4 inch.	1 Bull Pumping Engine, 24 in. cylinder.	
	6 " "		

# MORTAR MILLS.

2 Mortar Mills, with 4 ft. pans.	5 Mortar Mills, with 7 ft. pans.
4 ditto " 5 " "	5 ditto " 7 ft. 6 in. pans.
1 ditto " 6 " "	6 ditto " 9 ft. pans.

# SAW BENCHES, &c.

- 1 Bench, 4 ft. x 2 ft. 24 in. saw.
- 4 Benches, 5 ft. x 2 ft. 6 in. with 36 in. saw.
- 1 Bench, self-acting, 5 ft. x 2 ft. 9 in. with 32 in. saw, by Powis.
- 1 Wood planing Machine, by Robinson, 12 ft. x 15 in.
- 1 Hand Mortising Machine.
- 1 Grindstone Trough, for Moulding Irons.

# SUNDRIES.

- 2 Blowing Fans, 12 in.; 1 Iron Pug Mill, 4' 4" x 2' 0"; 1 Punching and Shearing Machine, for ½ in.; 1 ditto ditto, for ¾ in.; 1 Croosoting Cylinder, 66 ft. x 5' 9" x ¾ plates.

HENRY SYKES, 66, BANKSIDE, LONDON.

**GUIDE TO INVESTORS.**—MR. SPARGO'S "Guide to Investors" for the present month contains a tabulated statement of Banking, Mining, and other Companies, showing the depreciation in value during the last twelve months; and a price list of shares in Banks, Canals, Railways, Bridges, and Finance Companies up to Tuesday, the 3rd instant. It also contains articles on "Bulls and Bears," and their effects; Retrospect of 1873, and Prospects of 1874; the Revenue, our Position and Prospects; the Mine and the Rail; with necessary detailed information connected with the Stock and Share Markets, Mines, and Miscellaneous Companies.  
224 and 226, Gresham House, Old Broad-street, London, E.C.

# In the Court of the Vice-Warden of the Stannaries. Stannaries of Cornwall.

**IN THE MATTER OF THE COMPANIES ACTS, 1862 and 1867, and of the OREL TOR MINE COMPANY.**—TO BE SOLD, BY PUBLIC AUCTION, on Tuesday and Wednesday, the 17th and 18th days of March, 1874, at Eleven o'clock in the forenoon precisely on each day, at the Orel Tor Mine, in the parish of Calstock, within the said Stannaries, under the direction of the Registrar of the Court, in lots, the WHOLE of the VALUABLE and EXTENSIVE

**MINING PLANT, MACHINERY, MATERIALS, AND EFFECTS,** belonging to the company, and now being within and upon the said mine, and comprising, amongst numerous other effects,  
50 in. cylinder PUMPING ENGINE, 10 ft. stroke.  
22 in. double stamping BEAM ENGINE, 9 ft. stroke.  
20 in. cylinder WINDING ENGINE, 5 ft. stroke.  
ONE 11 ton BOILER.

TWO 10 ton BOILERS.  
Powerful Cornish crusher, with driving gear, &c., complete, eight arm capstan, oak axle, with span-beam, &c., 4 in. capstan, rope, shears, and pulleys, balance bob, 13 fms. 1 in. steel wire-rope, two 12 head stamps axles, one six head stamp with frames, lifters, heads, &c., complete, 123 fms. of pitwork, consisting of three 12 in. plunger-lifts, one 15 in. plunger-pole and case-working barrel, &c., 9 in. drawing gear, winding gear, four 12 ft. baffle wheels, two revolving calciners, 20 boulders, six tram wagons, three kibbles, several tons of bridge and other tram rails and saddles, a quantity of wood sheds, about 1000 fms. of launders, quantity of tin knives and dressing tools, lot of miners' chests, two small shaft bobs, 80 fms. 1½ main rods, hammered iron rod plates, lot of ½ in. and ¾ in. chain, a quantity of new wrought iron, screw stocks, plates, and taps, smiths' tools, two lifting jacks, two 3 in. screws, carpenters' bench, three sets of scales and weights, mine bell, and the office furniture.

The mine having been worked only a limited number of years the machinery and materials have had but little wear, and are, consequently, in excellent condition, and, it being situated on the banks of the River Tamar, unusual facilities for the removal of the materials by water are offered.

For further particulars apply to the official liquidator, Mr. CHARLES LEE NICHOLS, No. 1, Gresham-buildings, Basinghall-street, London; Messrs. CARR, BANNISTER, DAVIDSON, and MORRIS, Solicitors, No. 70, Basinghall-street, London; or to Mr. M. PAUL, Solicitor, Truro.  
Dated Feb. 23, 1874.

# In the Court of the Vice-Warden of the Stannaries. Stannaries of Cornwall.

**IN THE MATTER OF THE COMPANIES ACT, 1862, and of the PROSPER UNITED MINING COMPANY.**—By direction of His Honor the Vice-Warden, Notice is hereby given, that on Thursday, the 28th day of March instant, at Eleven o'clock in the forenoon, at the Registrar's Office, in Truro, in the county of Cornwall, this Court will proceed to MAKE A CALL OF TWELVE SHILLINGS PER SHARE on all the contributories settled as present members on the List of Contributories of the said company.

All persons interested therein are entitled to attend at the time and place above mentioned, to offer objections to such call.  
CHARLES WILLIAM CLINTON, Official Liquidator.  
Dated Stannaries Court Office, Truro, 12th March, 1874.

# SPEARNE CONSOLS MINE, ST. JUST, CORNWALL.

**MR. ALEXANDER BERRIMAN** is instructed to SELL, BY PUBLIC AUCTION, at the Account house on the Mine, on Monday, the 16th day of March, 1874, at Two P.M.,

# THE SPEARNE CONSOLS MINE (AS A GOING CONCERN).

The MACHINERY consists of—ONE 26 in. cylinder PUMPING ENGINE, with ONE 60 ton BOILER; ONE 20 in. cylinder WINDING ENGINE, with 5 tons BOILER; 176 fms. of PITWORK; 4 in. and 5 in. PUMPS; together with all the MATERIALS and PLANT thereon.

For viewing the above, and for further particulars, apply on the mine, and to Mr. RICHARD WHITE, Trevelard, St. Just.  
Dated St. Just, March 3, 1874.

# TO COAL AND IRONMASTERS AND CAPITALISTS.

**SALE OF IMPORTANT and VALUABLE MINES and MINERALS, at GREAT WYRLEY, CHURCHBRIDGE, and RUMER HILL, in the parish of CANNOCK, in the county of STAFFORD.**

**MR. J. U. FELLOWS WILL SELL, BY AUCTION,** at the Swan Hotel, Wolverhampton, on Wednesday, the 25th day of March, 1874, at Three for Four o'clock in the afternoon, subject to conditions, and in three or such other lots as may be agreed upon at the time of sale, upwards of 70 acres of

**VALUABLE MINES OF COAL AND IRONSTONE,** as follows:—

**LOT 1.**—All the MINES of COAL and IRONSTONE, lying and being under 524. 38. 27, of land, situate in the parishes of Cannock and Great Wyrley, and coloured pink on the plan.  
This lot adjoins the collieries of the Mid-Cannock Colliery and the Great Wyrley Colliery Company, and lands of Messrs. P. Williams and Co., and is conveniently intersected by the Birmingham Canal, and the Cannock Mineral Railway. It is also adjacent to the Churchbridge Ironworks, belonging to Messrs. William Gilpin, sen., and Co., and immediately contiguous to the Watling-street turnpike road and the road leading from Cannock to Walsall.

**LOT 2.**—All the MINES of COAL and IRONSTONE lying and being under 124. 08. 29, of land at Great Wyrley, Cannock, and coloured blue on the plan.  
The Cannock Mineral Railway also runs through this lot, which adjoins the Wyrley Railway Station, and is bounded by lands and mines belonging to Messrs. William Gilpin, sen., and Co., W. Charles, Esq., Bernard Gilpin, Esq., J. N. Bagnall, Esq., and others.

**LOT 3.**—All the MINES of COAL and IRONSTONE lying and being under 44. 18. 38, of land situate at Rumer Hill, Cannock, and coloured green on the plan.  
This lot lies between the collieries of the Mid-Cannock Colliery Company and the Cannock and Leacraft Colliery Company, and within about 100 yards of the Birmingham Canal.

The owner of either lot will be entitled to use such available portions of the surface as may be required for colliery purposes on compensating Mr. Bettson, the owner and occupier thereof, after the rate of £4 per acre per annum.

Every confidence is felt in offering the above mines to the notice of those who are seeking to invest their capital in mining enterprise, and the mines on all sides of the several lots having been proved, and large quantities of coal and ironstone daily raised from the adjoining collieries enhances the value of the lots now offered for sale.

The purchase money can be paid by instalments, one-third down and the remainder extending over a period of four years.  
For viewing the estate, application is to be made to Mr. BETTSON, and printed particulars and plans, with any further information, may be obtained on application to Mr. JAMES PRIOR, solicitor, and Mr. WOODCOCK, surveyor, both of Darlington-street, Wolverhampton; or to the Auctioneer, 7, Victoria Chambers, Bradford-street, Walsall.

**VERY VALUABLE MINE MACHINERY and MATERIALS FOR SALE, AT NORTH ROSKEAR MINE, CAMBORNE, CORNWALL.**

**MR. T. T. WHEAR, Auctioneer, Camborne,** has been favoured with instructions to SELL, BY PUBLIC AUCTION, at the Account house of North Roskear Mine, near the town of Camborne, on Wednesday, the 25th March, 1874, the WHOLE of the FIRST CLASS

**MACHINERY and MATERIALS, consisting of—**

ONE 70 in. cylinder PUMPING ENGINE, 10 ft. stroke in cylinder, and 8 ft. stroke in shaft, with metallic piston, and THREE 13 ton BOILERS, with steam pipes and fittings complete, with one cast iron balance bob at the surface.  
ONE 36 in. STEAM STAMPING ENGINE, 9 ft. stroke, with two fly wheels, 24 ft. 6 in. in diameter; SIX 16 head STAMP AXLES and HEADS, with lifters, &c., complete, and TWO 12 ton BOILERS, and fittings complete. This engine was made by Messrs. Harvey and Co., of Hayle, and is nearly equal to new.

ONE 24 in. WINDING ENGINE, metallic piston, 6 ft. stroke, with ONE 10 ton BOILER, heavy iron age, &c.

ONE 28 in. STEAM WINDING ENGINE, 19 ft. fly wheel, with wrought iron axle, 6 ft. stroke, with ONE 10 ton BOILER, and whim gear for wire rope. This engine was also made by Messrs. Harvey and Co., and is nearly equal to new.  
ONE 16 in. ENGINE, 4 ft. stroke, with two fly wheels, and 8 ton BOILER, gear for whim with iron gear, crusher, and saw machine attached.  
360 fms. of pitwork, principally in plunger lifts, and varying from 7 in. to 16 in. in diameter, strapping plates, bolts, &c.; also, main rods and a large quantity of iron; upwards of 600 fathoms of steel wire rope (mostly new), chain, punching machine, rail iron, smiths' tools, small engine turning lathe, &c., in fitting shop; 1 water wheel, 37 ft. diameter, 3 ft. 6 in. breast, with cranks and bobs for pumping; capstan; shears; capstan rope, 130 fms. long; 1 water wheel, 26 ft. diameter; 1 water wheel, 24 ft. diameter; 500 fathoms of iron stave ladders; underground balance bobs and connections; together with a large quantity of other materials in general use in mines, particulars of which will be found in catalogues.

The WHOLE of the EXTENSIVE and VALUABLE TIN DRESSING FLOORS, with THREE CALCINERS, complete—the whole of this has been recently laid down in the best possible manner, and embracing all the most modern and approved appliances.

The whole of the plant will be found of a superior description, and will first be offered, together with a promise of a new lease of the mine, in One Lot, and if not so sold will be offered in lots, to suit the convenience of purchasers, on the same day.

For viewing the above apply on the mine, and for further particulars to Mr. T. PRYOR, Redruth; Capt. JOSIAH THOMAS, Dolcoath Mine, Camborne, Cornwall; or to the Auctioneer, at his offices, Camborne.  
Luncheon at Eleven o'clock. Sale to commence at Twelve precisely.  
Dated March 12th, 1874.

**FOR SALE, an excellent 60-horse high-pressure HORIZONTAL STEAM ENGINE, 30 in. cylinder, 5 ft. stroke, with TWO spherical ended cylindrical BOILERS, 42 ft. long and 5 ft. diameter. Also TWO SETS of 18 in. PIT PUMPS, about 200 ft. long each, with double bell crank, connecting rod, and spears and gear complete. A 10 in. double action FORCE PUMP is attached to the engine, which can be detached, or otherwise.**

Application to be made to THOMAS HAWKLEY, Esq., C.E., 30, Great George street, Westminster; or to Mr. LOAM, at the Waterworks Office, Nottingham.

SAM'L MAPLES, Clerk to the Company.  
N.B.—The articles above mentioned have been used for sinking a large shaft, and are peculiarly well adapted for COLLIERY and other MINING PURPOSES.

**FOR SALE, ready for immediate delivery, ONE NEW STEAM DONKEY FEED PUMP; inverted cylinder 10 in. diameter by 12 in. stroke, working a 6 in. diameter brass plunger, chamber brass lined, valves brass.**  
For price and particulars, apply to PRACOP and TAYLOR, Engineers, &c., 44, Dean-street, Newcastle-on-Tyne.

# THE GUNPOWDER MILLS, EWELL, SURREY.

With the valuable PLANT and MACHINERY, equal to the manufacture of 20 tons of black powder, or 10 tons of sporting powder, per week. With possession.

**MESSRS. FULLER, HORSEY, SON, AND CO.** are instructed by the Patent Gunpowder Company (Limited) to SELL, BY AUCTION, at the Mart, Tokenhouse yard, on Wednesday, April 22, at One o'clock precisely, in One Lot, the old established and well-known GUNPOWDER MILLS, situate at EWELL, SURREY, on the Hog's Mill River, which rises a short distance from the property, and flows into the Thames at Kingston, and from which the motive power is derived; together with the whole of the fixed PLANT and MACHINERY.

The property comprises the UPPER and LOWER MILLS, consisting of SIX DETACHED BUILDINGS, fitted with FIVE PAIRS IRON FACED GRANITE EDGE RUNNERS, driven by THREE breast-shot WATER-WHEELS; INCORPORATING MILLS, with FOUR PAIRS IRON FACED GRANITE EDGE RUNNERS, and TWO PAIRS CAST-IRON EDGE RUNNERS, driven by a 30 horse power HORIZONTAL DOUBLE CYLINDER CONDENSING STEAM-ENGINE, by Easton and Ames, with shafting and gearing; a brick built steam-engine house, brick built boiler house, with TWO CORNISH BOILERS; two newly-erected substantial brick buildings, intended for workshops, each 80 ft. by 27 ft. 6 in.; CORNING HOUSE, with breaking rollers, elevators, &c., driven by a breast-shot WATER-WHEEL; brick built store, 24 ft. by 23 ft., with a porth end landing-place for boat; press-house, fitted with HYDRAULIC PRESS, 12-inch ram; beating engine house, with BEATING-ENGINE, 12 ft. long by 6 ft. wide, driven by a separate WATER-WHEEL; BREAKING MACHINE and HYDRAULIC PRESS, with 10 inch ram; separating-house, with SEPARATING MACHINE, glazing house, with four glazing barrels, dusting-house over, with two dusting reels, driven by a separate WATER-WHEEL; two brick built packing-shops, or stores, fitted with iron hot water pipes and boilers adjoining; a new brick built magazine, 24 feet square; composition house, with PAIR GRANITE EDGE RUNNERS, and CHARCOAL MILL, driven by a 6-horse power HORIZONTAL STEAM ENGINE, with CORNISH BOILERS; charcoal house and store; large barn, stabling, outhouses, and range of workshops; a capital residence for principal or manager, engineer's house, counting house, and fifteen cottages for workmen.

The entire estate, including garden, meadow and arable land, and water, covers a total area of 73 A. 1 R. 2 P., or thereabouts.

The buildings are well arranged, principally detached, and spread over the works at convenient and judicious distances; and the powder is conveyed from one part of the works to the other entirely by water carriage.

The whole held on lease for a term of 15½ years, from June 24, 1872, at the very low rent of £488 6s. 8d. per annum, to include the use of the machinery.

Printed particulars, with plans and schedules of the machinery, are in preparation, and, when ready, may be had of Messrs. ELMSTIE, FORSYTH, and SEDGWICK, 27, Leadenhall-street, E.C.; at the Mart; and of Messrs. FULLER, HORSEY, SON, and Co., 11, Billiter square, London, E.C.

# TO COALMASTERS, CAPITALISTS, AND OTHERS.

**TO BE OFFERED FOR SALE, BY PUBLIC AUCTION,** at the Wellington Hotel, in Leicester, by Messrs. DAVENPORT, GERMAN, AND ALLEN, on Thursday, the 28th day of March, 1874, at Four o'clock in the afternoon precisely, subject to conditions to be then produced, ALL the MINES, BEDS, and SEAMS of COAL and all other MINES and MINERALS, situate and being within and under all these several CLOSERS, PIECES, or PARCELS of LAND, forming a compact estate, and containing 179 A. 2 R. 24 P., or thereabouts, situate at IBSTOCK, in the county of LEICESTER.

Also, the right of pre-emption or privilege of purchasing certain specific parts of the surface of the before-mentioned estate (at the price or sum of £120 an acre), to enable the purchaser of the mines to develop and work the same.

The property is eligibly situated in the immediate neighbourhood of colliery works, being bounded on one side by the lands belonging to the Ibstock Colliery Company, and on the other side by mines leased to the Heather New Colliery, now in course of sinking.

The estate is within a short distance of the Heather Station of the Ashby and Nuneaton Railway.

Plans, with full particulars, may be obtained fourteen days prior to the sale on application to the Auctioneers, Messrs. SMITH and MAMMATT, or Messrs. FISHER, and CHEATLE, Solicitors, all of Ashby-de-la-Zouch.

For further particulars and to view the surface, application to be made to Mr. RICHARD THIRLBY, Mr. BENJAMIN THIRLBY, or Mr. JOSEPH CLARKE, all of Ibstock, or of Mr. JOSEPH SHERWIN, Burton-on-Trent.

# BALDWIN MINE, ISLE OF MAN.

# TO CAPITALISTS, MINING INVESTORS, AND PROMOTERS OF PUBLIC COMPANIES.

**TO BE SOLD, BY PUBLIC AUCTION** (unless otherwise previously disposed of by private treaty), at the British Hotel, Douglas, Isle of Man, on Wednesday, the 1st day of April, 1874, the SILVER-LEAD AND BLEND MINE, known as

# THE BALDWIN MINE.

Situate at BALDWIN, near DOUGLAS, ISLE OF MAN, together with the PLANT, MACHINERY, TOOLS, and STORES in and about the said mine.

The mine is in full working order, and can be entered upon at once, two north and south lodges have been opened out to a depth of 77 fms., and proved to contain a continuous and well defined run of ore, which has increased in value from the surface downwards to the present lower level, and from which returns of ore have been made.

The above will be offered in One Lot, or the vendors will, to suit purchasers, offer the concern in Two Lots, as follows:—

**LOT I.**—The MINING SETT, containing 1050 acres, or thereabouts, which the vendors hold under a lease from the Crown; the water supply is ample, and is also secured by lease. This Lot will be offered subject to the conditions contained in the said leases.

**LOT II.**—The WHOLE of the PLANT, MACHINERY, TOOLS, and STORES in and about the said mine, and consisting of ONE WATER-WHEEL, 24 ft. diameter, and 4 ft. 6 in. breast, with 6 fms. of pumping and lifting gear, complete; ONE DRAWING MACHINE, with patent friction coupling; 150 fms. wire rope, head gear, and sheaves; 350 fms. wagon roads, plated with iron; miners' tools, including 290 ft. cast steel jumpers, wedges, &c.; iron blocks, and about 40 fathoms strong cable chain; a good assortment of smiths' and mechanics' tools; and all the necessary plant and pitwork for working the mine.

The mine has been frequently inspected by mining engineers, Capt. Rowe, late of Great Laxey, amongst others, the following being a copy of his last report:—

# BALDWIN MINE.

The Great Laxey Mining Company (Limited), Laxey, Isle of Man, 12th June, 1872.

DEAR SIR,—In continuation of my report to you on the Baldwin Mine, dated the 5th instant, I wish to add that, if you carry out vigorously, with proper mining skill, the plan of working I have indicated in that report, I know of no more legitimate undertaking in a mining sense, or one possessing better chances of ultimate success. I base my reasons upon the following short summary of facts:—The north and south lodges exist in their proper form, their bearings and dip are all right for the production of large bodies of ore, and there is present in no small degree the necessary feeding cause—that of a large east and west cross-course, which, judging by exactly similar circumstances in our Great Laxey Mines, can scarcely fail in causing the north and south lodges to become steadily productive and valuable at an increased depth.—F. B. Collingwood, Esq.

R. ROWE.

# TO PROMOTERS OF PUBLIC COMPANIES.

The VENDORS are OPEN to TREAT with CAPITALISTS who can organise a Limited Company to continue the workings of the above mine, in which case arrangements may be made for the whole of the purchase-money to be paid in fully paid-up shares of such company when formed.



FOR 1873.

POST FREE, TWO SHILLINGS, IN STAMPS.

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For Cotton Spinners, Railway Companies, Engineers, Colliery Proprietors, and nearly every description of Employers of

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**AUTOMATIC CLOCKS,**For indicating the pressure of steam day and night,  
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Institutions, or Improvement Societies.

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BOILER FEEDING

**THE GRINDROD  
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Which keeps the water at one definite height day and night.  
MUCH IN USE IN THIS DISTRICT.

THE  
**STILWELL WATER HEATER**  
AND  
**LIME EXTRACTOR.**

**THE HALLAM  
GIFFARD INJECTOR.**

These are all high-class inventions, and are with  
confidence recommended.

CIRCULARS ON APPLICATION.

**MESSRS. WATSON BROTHERS** return their most sincere thanks for the great patronage bestowed and confidence reposed in their firm for upwards of 30 years, and to assure their friends and clients it will be their earnest endeavour to merit a continuance of both.

In the year 1843, when Cornish mining was almost unknown to the general public, attention was first called to its advantages, when properly conducted, in the "Compendium of British Mining," commenced in 1837, and published in 1843, by Mr. J. Y. WATSON, F.G.S., author of "Gleanings among Mines and Miners," "Records of Ancient Mining," "Cornish Notes" (first series, 1862), "Cornish Notes" (second series, 1863), "The Progress of Mining," with Statistics of the Mining Interest, annually for 21 years, &c., &c. In the Compendium, published in 1843, Mr. WATSON was the first to recommend the system of a "division of small risks in several mines, ensuring the success in the aggregate," and Messrs. WATSON BROTHERS have always a selected list on hand. Perhaps at no former period in the annals of mining has there been more peculiar need of honest and experienced advice in regard to mines and sharedealing than there is at present; and, from the lengthened experience of Messrs. WATSON BROTHERS, they are emboldened to offer, thus publicly, their best services to all connected with the mining interest.

Messrs. WATSON BROTHERS are daily asked their opinion of particular mines, as well as to recommend mines to invest or speculate in, and they give their advice and recommend mines to the best of their judgment and ability, founded on the best practical advice they can obtain from the mining districts, but they will not be held responsible, nor subject to blame, if results do not always equal the expectations they may have held out in a property so fluctuating as mining.

COLLIERIES, IRONWORKS, &amp;c.

Among the great complaints of metallic miners of late, has been the high prices of Coal and Iron; thus while dividends in Copper and Tin Mines have been gradually declining, many Collieries and Ironworks have been paying 20, 30, and even 60 per cent.; and in consequence of this, Messrs. WATSON BROTHERS have had several enquiries from clients for prices and particulars of the best investments in both classes, and they are collecting information which they hope to publish from time to time, and will be glad if Secretaries and Managers will furnish them with the same kind of information that Purveyors and Secretaries of Metallic Mines have so freely done during the last 30 years. In the meantime they will be ready to deal, at Market prices, in any or all of them.

## RAILWAY CARRIAGE COMPANY (LIMITED).

ESTABLISHED 1847.

OLDBURY WORKS, NEAR BIRMINGHAM.

MANUFACTURERS OF RAILWAY CARRIAGES AND WAGONS, and EVERY DESCRIPTION OF IRONWORK.

Passenger carriages and wagons built, either for cash or for payment, over a period of years.

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MANUFACTURE RAILWAY WAGONS OF EVERY DESCRIPTION, for HIRE and SALE, by immediate or deferred payments. They have also wagons for hire capable of carrying 6, 8, and 10 tons, part of which are constructed specially for shipping purposes. Wagons in working order maintained by contract.

EDMUND FOWLER, Sec.

WAGON WORKS, SMETHWICK, BIRMINGHAM.

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## MONEY, TIME, AND LIFE

ARE LOST IN THE EVENT OF

ACCIDENTAL INJURY OR DEATH.

Provide against these losses by a Policy of the

RAILWAY PASSENGERS' ASSURANCE COMPANY

AGAINST ACCIDENTS OF ALL KINDS.

THE OLDEST AND LARGEST ACCIDENTAL ASSURANCE COMPANY.

HON. A. KINNAIRD, M.P., Chairman.

PAID-UP CAPITAL AND RESERVE FUND £140,000.

ANNUAL INCOME, £160,000.

£810,000 have been paid as compensation.

Bonus allowed to Insurers of Five Years' standing.

Apply to the Clerks at the Railway Stations, to the Local Agents, or—

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ESTABLISHED 1860.

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For WATER SUPPLY to TOWNS, LAND IRRIGATION, and MINERAL EXPLORATIONS may be executed of any diameter, from 6 in. to 36 in., and to any depth to 2000 ft., by the

PATENT STEAM EARTH-BORING MACHINE OF  
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**Improved Valves and Taps for Water, Steam, Gas, &c. Pistons and  
Air-pump Buckets fitted with Patent Elastic Metallic Packing,**

Of which 6967 have been made to March, 1873.

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MANUFACTURERS of every description of MINING MACHINERY,  
TOOLS, MILLWORK, PUMPING, WINDING, & STAMPING ENGINES.

SOLE MAKERS OF

**BORLASE'S PATENT ORE-DRESSING MACHINES AND PULVERISERS.**

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THIS OIL is suitable to every kind of Machinery; it is used almost exclusively in Her Majesty's Dockyards and Fleet, and by the War Office and East India Government; as well as by the Royal Mail Steam Packet Co., Pacific Steam Navigation Co., P. and O. Co., Cunard Co., and by most of the other important Royal Mail Steam Fleets in the kingdom. It is also extensively employed on the various railways, and by many of the leading engineering and manufacturing firms at home and abroad.

"I hereby certify that the Rangoon Engine Oil, manufactured by Messrs. Chas. Price and Co., is free from any material which can produce corrosion of the metal work of machinery. It is calculated, indeed, to protect metallic surfaces from oxidation, and from its peculiar character, is not liable to lead to spontaneous combustion of cotton waste or any similar material which might become imbued with it, as is the case with Rape, Gallipoli, and Olive Oils. The lubricating power of this oil is equal to Sperm or Lard Oil."

Extract from Mr. BAXTER'S Speech in the House of Commons, May 31st, 1870:—

Chas. Price and Co.'s Rangoon Oil—"a vastly superior article" (speaking of Gallipoli Oil at £72 per ton)—"was obtained for from £40 to £45 per ton."

Every parcel of the Oil sent from the Works bears the Trade Mark of the Firm, and as many spurious imitations of the Rangoon Engine Oil are sold purchasers are requested to observe that none is genuine which does not bear this mark.

Oil, Tallow, and Colour Merchants, Seed Crushers, Turpentine Distillers, &amp;c.

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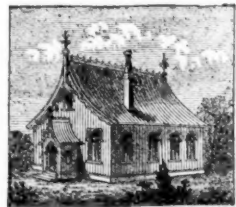
Also, GALVANISED CORRUGATED IRON ROOFING, for MINING, COLLIERY, RAILWAY, and GENERAL PURPOSES.

WORKMEN'S COTTAGES erected in blocks at very low prices.

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I. D.'S IRON HOUSES and IRON ROOFS are ECONOMICAL, DURABLE, QUICKLY ERECTED, and REMOVABLE WITHOUT INJURY.

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ESTIMATES ON APPLICATION AT 8, UNION COURT, OLD BROAD STREET, LONDON, E.C.



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CO-PATENTEE OF "THE POWER-JUMPER."

SOLE AND EXCLUSIVE AGENT FOR

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THE CHEAPEST AND BEST MACHINE FOR SINKING, MINING, AND QUARRYING.

"THE ECONOMIC" COAL CUTTER,

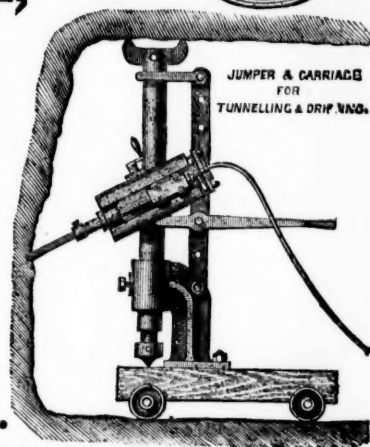
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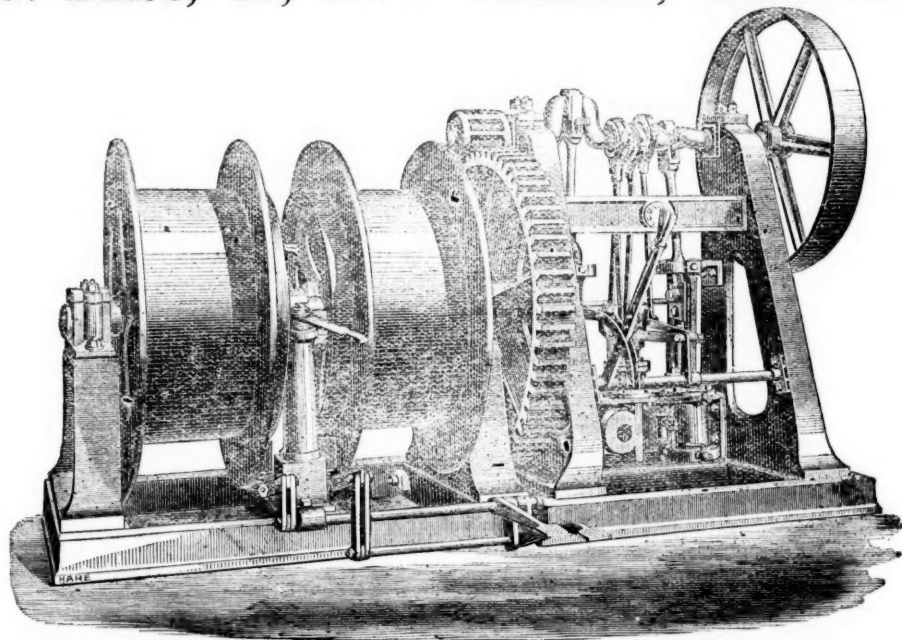
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IMPROVED DESIGN of Engine for HAULING, for use with either Steam or Compressed Air.

Takes less room, and can be supplied for less money, than any other Engine of same power.

May also be had with single drum for winding.

FRANCIS MORTON & CO., LIMITED, LIVERPOOL,

Manufacture, in Galvanised and Corrugated Iron,

IRON ROOFS, IRON BUILDINGS, IRON SHEDS,

Which they have extensively supplied and erected for mining requirements at home and abroad.

ESTIMATES FURNISHED ON RECEIPT OF PARTICULARS.

F. M. & CO.'S PATENT IRON ROOFING TILES OR SLATES ARE IN SPECIAL FAVOUR FOR TEMPORARY COVERING,

They require considerably less framework to carry them than ordinary slates or tiles.

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IRON, STEEL, AND GENERAL MERCHANTS,  
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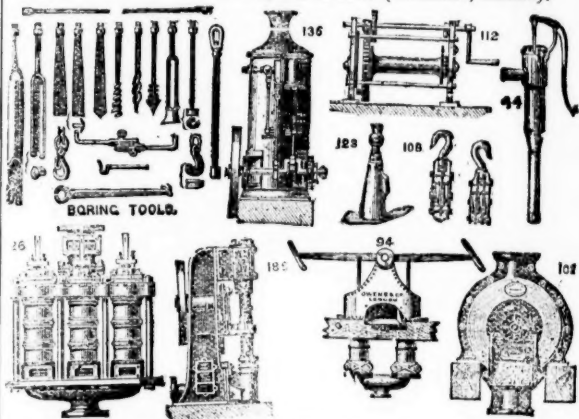
SECOND-HAND RAILS, AND EVERY DESCRIPTION OF RAILWAY, COLLIERY, AND CONTRACTORS PLANT ALWAYS ON HAND.

S. OWENS AND CO.,

Hydraulic and General Engineers,

WHITEFRIARS STREET, FLEET STREET, LONDON

AND AT 195, BUCHANAN STREET, GLASGOW (W. HUME, AGENT).



MANUFACTURERS OF BORING TOOLS, for testing ground for Minerals. Bridge foundations, Artesian Wells, &c., to any depth.  
No. 26.—Treble Barrel and other Deep Well Pumps.  
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No. 108.—Pulley Blocks of all sizes.  
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## D MINES—Continued.

## NON-DIVIDEND MINIMUMS

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## NON-DIVIDEND MINIMUMS

## NON-DIVIDEND MINIMUMS

### NON-DIVIDEND MINES—Continued

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Shares.	Mines.	Paid.	Last Pr.	Close.
3528	Tin Valley, St. Neot	13 13	6	3 1/2
5000	Treleigh Wood, t, Redruth	3 18 0	5	3 1/2
1024	Treleigh Wood United, t, Redruth	1 5 0	...	3 1/2
547	Treycon Consols, t	13 0 0	5 1/2	3 1/2
2000	Trevelthan, s, s, Cranstock*	2 0 0	...	3 1/2
7500	Trevelthan, Altarnun	2 0 0	...	3 1/2
15000	Tretoli, t, t, Bodmin	2 0 0	...	3 1/2
2800	Trevarrack, t, c, Uuy Lelant	4 0 0	1 3/4	1 1/4
200	Tucker's Downs, Camborne	2 0 0	...	1 1/4
12000	Tyllwyd, s, s, Cardigan	1 0 0	1 1/2	1 1/4
6000	Unity Wood, t, c, Kenwyn	2 10 0	...	1 1/4
15000	Van Consols, t, Llanidloes	2 10 0	3 1/2	1 1/4
1000	Vaughan, s, s, Cardigan	7 0 0	...	1 1/4
20000	Victoria, t, Perranzabuloe	1 0 0	...	1 1/4
25000	Vron United, s, s, Flintshire	1 0 0	...	1 1/4
30000	W. Cardigan	1 0 0	...	1 1/4
6000	West Basset, c, Illogan	3 18 0	6	1 1/4
110592	West Caradon, c, St. Cleer*	1 10 0	28	5 1/2
100	West Condurrow, t, c, Camborne	5 0 0	...	5 1/2
10000	W. Esqair Lie, l, Card.	2 0 0	2 1/2	2 1/2
5000	West Godolphin, t, c, Breage	1 80 0	2 1/2	2 1/2
12000	West Goginan, s, Cardiganshire	2 0 0	2	1 1/2
5164	West Great Work, t, Breage	4 16 0	1 1/2	1 1/2
1000	W. Gwennap Consols, t, c, Gwennap	5 0 0	...	1 1/2
15000	W. Jewell, t, Gwennap (pref. 1/2 prem.)	1 0 0	1 1/4	1 1/4
1000	West Lundy, t, c, Lundy	2 0 0	...	1 1/4
12000	West Maris & Portcove, t, c, Lamer.	1 0 0	3 1/2	3 1/2
50000	West Milwr, s, s, Flint	4 0 0	...	3 1/2
12000	West Pant-y-Go, s, s, Flint	1 0 0	3 1/2	3 1/2
3000	West Phoenix, t, Linkinhorne	0 13 0	...	3 1/2
1403	West Polbreen, t, St. Agnes	3 5 0	...	3 1/2
10000	West Roskear, t, s, s, bl, c, Camborne	0 2 0	3 1/2	3 1/2
12000	West Stipstones, l, Salop*	1 0 0	...	3 1/2
12000	West Tankerville, l, Salop*	3 0 0	2	1 1/2
512	West Tolgus, c, Redruth	92 10 0	23	10 21
2000	West Trevelthan, t, c, Lelant	1 10 6	...	10 21
6000	West Wheal Gorlan	1 0 0	2	10 21
600	West Wheel Seton, c, Camborne	55 15 0	13 1/2	8 1/2
6000	Wheel Agar, c, Illogan	9 12 0	1 1/2	1 1/2
6000	Wheel Argus, t, Sancered	0 10 0	1 1/2	1 1/2
25000	Wheel Arthur, t, c, Calstock*	1 0 0	...	1 1/2
741	Wheel Basset and Grylls, t, c	9 18 6	...	1 1/2
512	Wheel Buller, c, Redruth	55 5 0	8 1/2	6 8
6000	Wheel Coates, t, St. Agnes	2 0 0	...	6 8
6000	Wheel Crebor, c, Tavistock	4 10 0	3	2 1/2
3000	Wheel Dinnia, t, c, Buckfastleigh	1 10 0	...	2 1/2
5000	Wheel Gravelly, t, c, Breage	0 8 0	...	2 1/2
5179	Wheel Grenville, c, Camborne*	5 4 0	3 1/2	3 3/4
2048	Wheel Jane, t, Kea	2 13 10	3	2 1/2
12000	Wheel Jewell, c, Marazion	1 10 0	...	2 1/2
12000	Wh. Mary Hutchings, s, t, Plympton.	1 10 0	4	3 1/4
1000	Wheel Osborne, t, Crowan	3 0 0	...	3 1/4
3000	Wheel Peevor, t, Redruth	3 10 0	2 1/2	2 3/4
6000	Wheel Prussia, t, Redruth	2 0 0	...	2 3/4
10000	Wheel Ruby, t, Ludgvan	1 0 0	...	2 3/4
4568	Wheel Sparrow, t, Redruth	4 0 0	...	2 3/4
1000	Wheel Trevelthan, t, Breage	1 0 0	...	2 3/4
4096	Wheel Uuy, t, c, Redruth	12 9 0	2	1 1/2
8000	Wheel Vincent, t, Alternun	1 11 0	...	1 1/2
8000	White Works, t, Dartmoor*	5 0 0	...	1 1/2
12000	Willoughby, t, Llanrwst	2 10 0	...	1 1/2
10000	Wood Close & Polgooth, t, St. Mew.*	2 10 0	...	1 1/2
1200	Zennor, t, Cornwall	5 0 0	10 1/2	10 1/2

Shares.	Mines.	Paid.	Last Pr.	Close.
3528	Tin Valley, St. Neot	13 13	6	3 1/2
5000	Treleigh Wood, t, Redruth	3 18 0	5	3 1/2
1024	Treleigh Wood United, t, Redruth	1 5 0	...	3 1/2
547	Treycon Consols, t	13 0 0	5 1/2	3 1/2
2000	Trevelthan, s, s, Cranstock*	2 0 0	...	3 1/2
7500	Trevelthan, Altarnun	2 0 0	...	3 1/2
15000	Tretoli, t, t, Bodmin	2 0 0	...	3 1/2
2800	Trevarrack, t, c, Uuy Lelant	4 0 0	1 3/4	1 1/4
200	Tucker's Downs, Camborne	2 0 0	...	1 1/4
12000	Tyllwyd, s, s, Cardigan	1 0 0	1 1/2	1 1/4
6000	Unity Wood, t, c, Kenwyn	2 10 0	...	1 1/4
15000	Van Consols, t, Llanidloes	2 10 0	3 1/2	1 1/4
1000	Vaughan, s, s, Cardigan	7 0 0	...	1 1/4
20000	Victoria, t, Perranzabuloe	1 0 0	...	1 1/4
25000	Vron United, s, s, Flintshire	1 0 0	...	1 1/4
30000	W. Cardigan	1 0 0	...	1 1/4
6000	West Basset, c, Illogan	3 18 0	6	1 1/4
110592	West Caradon, c, St. Cleer*	1 10 0	28	5 1/2
100	West Condurrow, t, c, Camborne	5 0 0	...	5 1/2
10000	W. Esqair Lie, l, Card.	2 0 0	2 1/2	2 1/2
5000	West Godolphin, t, c, Breage	1 80 0	2 1/2	2 1/2
12000	West Goginan, * Cardiganshire	2 0 0	2	1 1/2
5164	West Great Work, t, Breage	4 16 0	1 1/2	1 1/2
1000	W. Gwennap Consols, t, c, Gwennap	5 0 0	...	1 1/2
15000	W. Jewell, t, Gwennap (pref. 1/2 prem.)	1 0 0	1 1/4	1 1/4
1000	West Lundy, t, c, Lundy	2 0 0	...	1 1/4
12000	West Maris & Portcove, t, c, Lamer.	1 0 0	3 1/2	3 1/2
50000	West Milwr, s, s, Flint	4 0 0	...	3 1/2
12000	West Pant-y-Go, s, s, Flint	1 0 0	3 1/2	3 1/2
3000	West Phoenix, t, Linkinhorne	0 13 0	...	3 1/2
1403	West Polbreen, t, St. Agnes	3 5 0	...	3 1/2
10000	West Roskear, t, s, s, bl, c, Camborne	0 2 0	3 1/2	3 1/2
12000	West Stipstones, l, Salop*	1 0 0	...	3 1/2
12000	West Tankerville, l, Salop*	3 0 0	2	1 1/2
512	West Tolgus, c, Redruth	92 10 0	23	10 21
2000	West Trevelthan, t, c, Lelant	1 10 6	...	10 21
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5000	Wheel Dinnia, t, c, Buckfastleigh	1 10 0	...	2 1/2
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4568	Wheel Sparrow, t, Redruth	4 0 0	...	2 3/4
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1200	Zennor, t, Cornwall	5 0 0	10 1/2	10 1/2

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